

Configuring Microsoft® Windows® Server 2003 on the HP Integrity Server, Datacenter Edition



May 2004 (Third Edition)
Part Number 5990-6877

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Introduction

This document will assist you in configuring Microsoft® Windows® Server 2003 operating system, Datacenter Edition, on an HP Integrity server after it has been successfully installed, either via the re-install media, or if it has been shipped pre-installed from HP. This guide will assist you in initial preparations to configure the system for a Windows installation. It will also assist you in using the re-installation media to re-install the Windows operating system and perform the final steps to configure Windows OS on your server. After this process is complete, Windows will be ready for normal operation. This guide will also help you to complete the Windows installation if it was pre-loaded on the system by HP.

The following symbols are placed throughout this document. They are to caution you that essential information is presented. Failure to follow directions could result in unsuccessful system setup and preparation.



CAUTION: Text set off in this manner indicates that failure to follow directions could result in unsuccessful system setup and preparation.

IMPORTANT: Text set off in this manner presents essential information to explain a concept or complete a task.

Prerequisite Training to Successfully Get Started and Set Up the HP Integrity Server

1. Obtain training on the HP Integrity server hardware for successful physical hardware setup.
2. Obtain training on Windows Server 2003 operating system on HP Integrity servers for successful pre-operating system setup and instructions on how to use the re-installation media to get Microsoft Windows software up-and-running.
3. Obtain training on Microsoft Windows Server 2003, 64-bit Datacenter Edition, for successful OS configuration and operation.

NOTE: The installation of Microsoft Windows Server 2003 software, 64-bit Datacenter Edition, is not similar to other 32-bit Datacenter installations that you may have performed. Please follow the instructions given in the **all** the guides mentioned above.

Support is also available on the HP website at

<http://www.hp.com/support/itaniumservers>

I. Pre-OS System Setup

This section will assist you in configuring your HP Integrity Server and prepare it to run Microsoft® Windows® Server 2003 operating system.

This section is required reading. The instructions given in this document are important for all customers intending to run Microsoft Windows Server 2003 on their HP Integrity Server, even if the HP Integrity Server was ordered pre-installed with Windows Server 2003. This document contains the following sections:

- System Setup and Preparation (steps to be performed prior to booting Windows)
 - The preparation steps must be performed to successfully run Windows Server 2003 on an HP Integrity Server. These steps are required and are essential prior to booting your operating system.
- EFI Overview
- MP (Management Processor) Introduction
- Windows Supported Hardware
- Troubleshooting Tips

Requirements

- An HP Integrity Server with fully installed and configured hardware
- One or more network interface cards (NIC)
- One or more hard disk drives
- Management Console PC or IA-32 based management workstation

Note that:

- Additional information can be found on the HP website at <http://www.hp.com/support/itaniumservers>.
- Documentation and copies of important software are available on the HP Smart Setup media.

System Setup and Preparation

Windows and the ACPI flag



CAUTION: HP ACPI Configuration Windows flag must be enabled through this manual process prior to booting to Windows Server 2003, Datacenter Edition.

If you ordered the server with Windows pre-installed the ACPI Configuration Windows flag will already be enabled. Verify that the partition has the ACPI flag set to Windows prior to booting to Windows.

To check the ACPI flag, do the following from the EFI prompt:

```
Shell> acpiconfig
Acpiconfig settings: windows
```

If the ACPI flag is not set to windows, perform the following from the EFI prompt:

```
Shell> default
Shell> acpiconfig windows
windows settings have been enabled.
A reset is required for the settings to take effect.
Shell> reset
```

Your system firmware is now configured to run Windows. If the ACPI flag is not set to Windows, Windows will display a blue screen, and will not boot successfully.

After the ACPI flag is set, it will remain set until a firmware flash or repartition of the system is performed using nPartition management tools, such as the nPar Commands or the Par Commands Wizard.

Set the Windows ACPI settings:

1. After software or hardware changes and at initial boot, verify that the ACPICONFIG is set for Windows.
 - a. At the EFI shell, type **ACPICONFIG** to view the configuration. This will display **acpiconfig settings: windows** if Windows mode is enabled.
 - b. To enable this mode, type **ACPICONFIG WINDOWS**.
 - c. Type **ACPICONFIG** to verify that the configuration is enabled.
 - d. Reset the system with the EFI **reset** command.
2. If using a local video/keyboard verify that the local video output and keyboard input are set in the boot manager.

Critical workaround to be performed if you are installing manually on a cell-based system for a successful boot

After the first OS reboot from text setup mode and before the GUI installation mode has started, the EFI boot manager entry must be modified. To do this, break into the boot sequence by pressing any key before the boot manager menu is displayed. Exit to the EFI shell. The **novesa** switch must be added to the **OsLoadOptions**. It should read **OsLoadOptions = /redirect /novesa** when you are finished. Use the **NVRBOOT.EFI** utility located in the **MSutil** directory on the EFI system partition to modify the entry to continue. Exit the utility, exit the EFI shell, and select the OS boot entry.

Preparing for Installation

Disconnect all mass storage devices from all controllers **except** for the controller that you intend to use as the boot controller. Make a note of where these devices were connected for reconnection later. Doing this makes it much easier to install to the correct device.

Firmware flash and the ACPI flag

If you perform a firmware flash, verify that the ACPI flag is set for Windows, see “Windows and the ACPI Flag” section above, after the flash completes. The ACPI flag is persistent, but changes in firmware functionality may affect this flag. To check the ACPI flag, enter:
Shell> acpiconfig and verify that the response is ACPI config settings:
Windows.

Workaround for manual installation on a cell-based system

Perform this workaround if you are installing manually on a cell-based system to boot successfully. After the first OS reboot (TXTsetup mode) and before the GUI installation is started, the EFI boot manager entry must be modified.

To modify the entry:

1. Break into the boot sequence by pressing any key before the boot manager menu is displayed.
2. Exit to the EFI shell.
3. Use the **NVRBOOT.EFI** utility in the directory **MSutil** to modify the entry. Add the **novesa** switch to the **OsLoadOptions = /redirect /novesa**.
4. Exit the utility, exit the EFI shell, and select the **OS boot entry**.

Timed out waiting for auto-negotiation to complete for only HP Integrity Server

When booting firmware, the following message may be displayed:

Timed out waiting for auto-negotiation to complete

When this happens, boot is being delayed in the EFI and it will take longer to get to the boot manager menu. These messages are coming from the core I/O's 100BT NIC. To stop these delays and messages, you can simply plug a LAN cable into the core I/O LAN port.

To Enable local EFI output over VGA

If using an HP Graphics and USB Combo card (A6869A), enable the EFI video to be displayed locally over the VGA by using the following instructions:

1. From the EFI Boot Manager select **Boot option maintenance menu** and press **Enter**
2. Select the **Select Active Console Output Devices** and press **Enter**
3. Highlight the line with **PCI 510 device**. This device is the system VGA card. If there is not an asterisk at the beginning of the line press the space bar. The space bar will toggle this device as enabled or disable as indicated by the asterisk (enabled).
4. Select **Save Settings to NVRAM** and press **enter**.
5. Exit.

At this point, you will need to reset the partition, by typing a reset command at the efi shell.

NOTE: This only needs to be performed on systems that have VGA cards installed.

Location of Cells for the HP Integrity Superdome

Note the numbering scheme given below for the physical location of cells:

```
In cabinet 0: cell 0-7
In cabinet 1: cell 8-15\
```

Install/Boot OS from a hard disk drive not on the core I/O chassis for the HP Integrity Server

HP strongly recommends that you install the boot controller on the core I/O chassis. If the boot controller is not in the core I/O chassis, you must run the search command on that cell to find it. This search also must be performed at the time of every reboot.

For example, if you want to load/detect hard disk drives attached to the Smart Array controller in cell 8 of the partition then issue the following command:

```
Shell> search 8

dec2114x found MAC address xx:xx:xx:xx:xx:xx Name = sni7
Scsi (Pun5,Lun0) PIONEER DVD-ROM DVD-305 1.00 ( 20 MBytes/sec)
(Press <F8> to run the Option ROM Configuration for Arrays Utility
Press <ESC> to skip configuration and continue
RAID 4/5/ADG performance may be higher after completion.
```

NOTE: Now you can install the OS to this hard disk drive attached to the Smart-Array controller in cell 8 of the partition. After the OS installation is complete, it will automatically add the entry in the Boot Manager for that disk, the card will be connected automatically even if it is not on the core I/O chassis.



WARNING: Every time you reboot the OS, you will need to run the **SEARCH 8** command to load the driver for the controller.

Configuring your complex: cell assignments and nPartition management

Two Windows nPartition management tools are available, the nPar Commands (ParCLI) and the Par Commands Wizard (Par Wrapper). Review the *nPartition Management for HP Integrity Servers using Microsoft® Windows®* for your platforms for complete details on partitioning your system and installing partition management tools.



NOTE: Partitions must be placed in **Reset for Reconfiguration mode** for partition changes to take place. It is recommended you place partitions in **Reset for Reconfiguration mode** before beginning partition management activities.

Entering Reset For Reconfiguration mode

To enter Reset for Reconfiguration mode, shut down each nPartition operating system. Next, telnet to the MP management processor for the complex. Enter the Command Menu and run the **RR** command for each target partition.

NOTE: When finished with partition management, boot each partition using the MP Command Menu **BO** command.

Each time a DVD or CD is inserted in to the DVD-ROM/CDROM drive after booting to EFI, the map-r command needs to be issued in order for the system to detect it at the EFI shell

To issue the map -r command:

```
Shell> map -r
```

Device mapping table

```
fs0    : Acpi(000222F0,2)/Pci(1|0)/Scsi(Pun2,Lun0)/CDROM(Entry0)
fs1    :
Acpi(000222F0,1A)/Pci(1|0)/Pci(4|0)/Scsi(Pun0,Lun0)/HD(Part1,SigCF
5F2D
DC-B885-11D7-B831-000000000000)
fs2    :
Acpi(000222F0,1A)/Pci(1|0)/Pci(4|0)/Scsi(Pun0,Lun0)/HD(Part2,SigCF
5F32
28-B885-11D7-B831-000000000000)
blk0   : Acpi(000222F0,2)/Pci(1|0)/Scsi(Pun2,Lun0)
blk1   : Acpi(000222F0,2)/Pci(1|0)/Scsi(Pun2,Lun0)/CDROM(Entry0)
blk2   : Acpi(000222F0,1A)/Pci(1|0)/Pci(4|0)/Scsi(Pun0,Lun0)
blk3   :
Acpi(000222F0,1A)/Pci(1|0)/Pci(4|0)/Scsi(Pun0,Lun0)/HD(Part1,SigCF
5F2
```

The DVD/CD media can now be accessed via FS0.

NOTE: If after running map -r the DVD or CD is still not visible run the reconnect command. See below for instructions on reconnect.

Each time additional hardware is added to the system after booting to EFI, (that is, HDD, USB device, DVD-ROM drive) a reconnect –r command needs to be issued in order for the system to detect it at the EFI shell

For example:

```
Shell> help reconnect
RECONNECT devicehandle [driverhandle [childhandle]] | [-r]

devicehandle : Device handle (hex)
driverhandle  : Driver handle (hex)
childhandle   : Child handle of device (hex)
-r            : Reconnect drivers from all devices
```

NOTES:

1. This command disconnects the drivers from the controller, just like 'disconnect', but it then immediately reconnects them.
2. This command tests to see if drivers are following the EFI Driver Model.
3. To find the device handle use the 'devices' efi command.

Example:

```
* To reconnect all drivers from all devices:
Shell> reconnect -r
```

NOTE: For other optional parameters you can use the dh command to find each of the handle numbers.

Setup VT100 Terminal Emulator

1. Connect one end of the Null Modem Cable to the COM port of the server. For the Integrity Superdome server, a serial card will need to be added since there is no core COM port.
2. Connect the other end of the Null Modem Cable to one of the COM ports on Terminal Client system (for example., COM1).
 - e. The Terminal Client can be a notebook PC, desktop PC, a server, and so on.
 - f. The Terminal Client must have an OS and HyperTerminal software installed.
3. On the Terminal Client system, verify that the COM port (for example., COM1) is ready for use.
4. Launch **the HyperTerminal** application.
5. Select the COM port to which the Null Modem Cable is connected.

6. Set the following for Port Settings:

Bits per second: 9600
Data bits: 8
Parity: none
Stop bits: 1
Flow Control: Xon/Xoff

NOTE: Xon/Xoff is software handshaking and is the standard software method for controlling the data flow. EFI uses Xon/Xoff to communicate via the terminal device instead of hardware flow. Legacy systems that do not have EFI will use hardware flow for controlling the data flow between the devices connected via the serial cable.

The text control flow Xon/Xoff is not enabled at this time in 64-bit Microsoft Windows Server 2003, Datacenter Edition, versions. Please check the Microsoft website at <http://www.microsoft.com> for the latest update

7. Your Terminal Client should now be able to emulate a VT100 terminal.

NOTE: The VT100 Terminal definition and the ASCII character set do not support all keys on a standard U.S. 101 keyboard, nor do they support all the characters necessary for international keyboards. A VT100 emulator does not support displaying output in color.

NOTE: For support of VT-UTF8 Hp recommends using PUTTY.exe which is included on the HP Smart Setup media.

Conventions for Keys Not in VT100 Terminal Definition and ASCII Character Set

Keyboard	Sequence	Keyboard	Sequence	Keyboard	Sequence
Home Key	<ESC>h	Function 1	<ESC>1	Function 7	<ESC>7
End Key	<ESC>k	Function 2	<ESC>2	Function 8	<ESC>8
Insert Key	<ESC>+	Function 3	<ESC>3	Function 9	<ESC>9
Delete Key	<ESC>-	Function 4	<ESC>4	Function 10	<ESC>0
Page Up key	<ESC>?	Function 5	<ESC>5	Function 11	<ESC>!
Page Down	<ESC>/	Function 6	<ESC>6	Function 12	<ESC>@
Line Feed	^J	Cursor Up	<ESC>[A	Turn on blinking	<ESC>[5m
Home Cursor	<ESC>[H	Cursor Down	<ESC>[B	Turn on bold	<ESC>[1M
Backspace	^H	Cursor Forward	<ESC>[C	Tab	^I
Escape	<ESC> -<ESC>	Cursor Backward	<ESC>[D	Back tab	<ESC>[Z

NOTE: Key sequences beginning with <ESC> must be pressed quickly otherwise they will not be recognized by the computer

Support for the HP Graphics and USB Combo adapter is limited to the core I/O chassis only on the HP Integrity Server

Issue: The HP Graphics and USB Combo adapter is supported only in the I/O chassis attached to the root cell. If you attempt to install this card in an I/O chassis not attached to the root cell, unexpected behavior of the card may result.

How to enable the VGA locally for EFI shell level output

EFI Boot Manager

Select a boot option:

```
Windows Server 2003, Datacenter
EFI Shell [Built-in]
Boot option maintenance menu
```

Select **Boot option maintenance menu**

EFI Boot Maintenance Manager

From the main menu, select an operation:

```
Boot from a File
Add a Boot Option
Delete Boot Option(s)
Change Boot Order
Manage BootNext setting
Set Auto Boot TimeOut
Select Active Console Output Devices
Select Active Console Input Devices
Select Active Standard Error Devices
Cold Reset
Exit
```

Select **Select Active Console Output Devices**

EFI Boot Maintenance Manager

Select the Console Output Device(s):

```
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(PcAnsi)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100)
* Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100+)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(VtUtf8)
Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)
```

Save Settings to NVRAM

Exit

Select option **Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)**

Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(PcAnsi)

Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100)

* Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100+)

Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(VtUtf8)

* Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)

Save Settings to NVRAM

Exit

Save the Settings to NVRAM and then exit.

How to disable the VGA locally for EFI shell level output

EFI Boot Manager

Select a boot option:

Windows Server 2003, Datacenter

EFI Shell [Built-in]

Boot option maintenance menu

Select **Boot option maintenance menu**

EFI Boot Maintenance Manager

From the main menu select an operation:

Boot from a File

Add a Boot Option

Delete Boot Option(s)

Change Boot Order

Manage BootNext setting

Set Auto Boot TimeOut

Select Active Console Output Devices

Select Active Console Input Devices

Select Active Standard Error Devices

Cold Reset

Exit

Select **Select Active Console Output Devices**

EFI Boot Maintenance Manager

Select the Console Output Device(s):

```
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(PcAnsi)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100)
* Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100+)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(VtUtf8)
* Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)
Save Settings to NVRAM
Exit
```

Unselect option “Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)”

```
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(PcAnsi)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100)
* Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100+)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(VtUtf8)
Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)
Save Settings to NVRAM
Exit
```

Save settings to NVRAM and then exit.

How to enable the VGA locally for EFI shell level output for the HP Graphics and USB Combo card (A6869A)

EFI Boot Manager

Select a boot option:

```
Windows Server 2003, Datacenter
EFI Shell [Built-in]
Boot option maintenance menu
```

Select **Boot option maintenance menu**

EFI Boot Maintenance Manager ver 1.10 [14.61]

From the main menu, select an operation:

```
Boot from a File
Add a Boot Option
Delete Boot Option(s)
Change Boot Order
Manage BootNext setting
```

```
Set Auto Boot TimeOut
Select Active Console Output Devices
Select Active Console Input Devices
Select Active Standard Error Devices
Cold Reset
Exit
```

Highlight **Select Active Console Output Devices**

EFI Boot Maintenance Manager ver 1.10 [14.61]

NOTE: Use the space bar to select and deselect. The space bar toggles enabling/disabling the highlighted line. The asterisk indicates the line is enabled.

Select the Console Output Device(s):

```
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(PcAnsi)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100)
* Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100+)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(VtUtf8)
Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)
Save Settings to NVRAM
Exit
```

Select option **Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)**

```
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(PcAnsi)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100)
* Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100+)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(VtUtf8)
* Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)
Save Settings to NVRAM
Exit
```

Save the Settings to NVRAM and then exit.

NOTE: When adding more cells to an existing partition make sure there is only one VGA controller in the partition. The VGA controller needs to be in the core I/O chassis (the I/O chassis attached to the root cell).

The Smart Array Option ROM Configuration for Arrays (ORCA) only configures the first adapter discovered in the system

Issue: The ORCA offline configuration utility will only allow the first adapter discovered according to the PCI enumeration to be configured. Other adapters even if connected will not be registered by the ORCA utility.

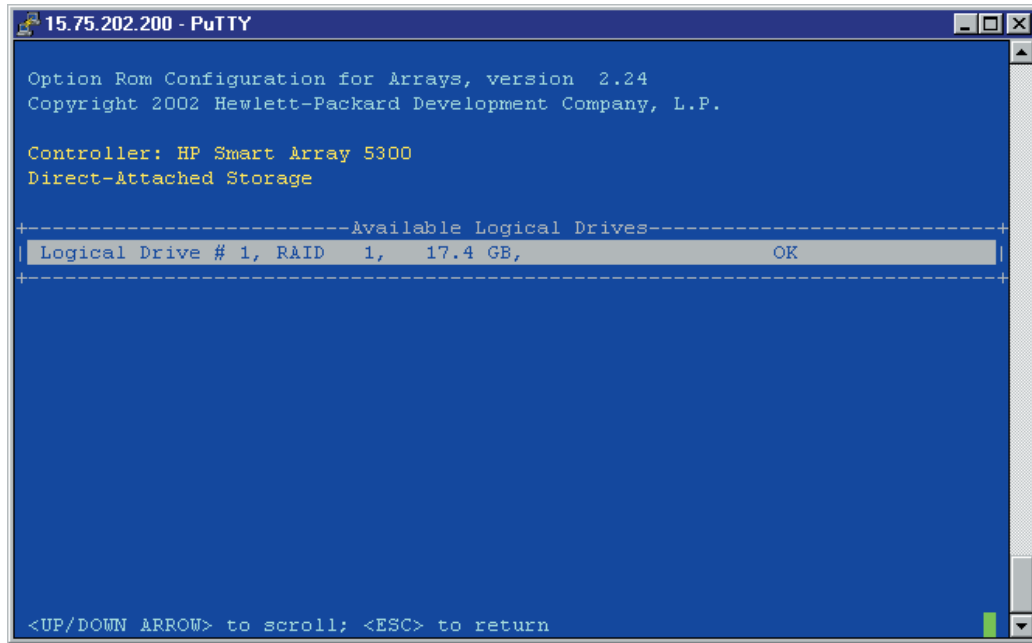


Figure 2: PuTTY.exe

Interaction and Limitations of the HP Graphics and USB Combo adapter and the Smart Array Controller for the HP Integrity Superdome

Issue: If the HP Graphics and USB Combo Adapter is in a PCI slot that has a higher priority than the Smart Array Controller, the Smart Array cannot load the EFI driver during and after system boot when the `search` or `reconnect` command is issued.

NOTE: The priority of the PCI slots is based on firmware initialization (see table).

Workaround: Insert the HP Graphics and USB Combo Adapter in PCI slot 6.

Order of Firmware Initialization of PCI Slots for the HP Integrity Superdome

PCI I/O Slot	Firmware Initialization Order
PCI Slot 0	0
PCI Slot 1	1
PCI Slot 2	2
PCI Slot 3	3
PCI Slot 4	4
PCI Slot 5	5
PCI Slot 6	11
PCI Slot 7	10
PCI Slot 8	9
PCI Slot 9	8
PCI Slot 10	7
PCI Slot 11	6

BootNext variable

The BootNext variable is used during the Windows installation process to automatically boot into particular setup programs. While not expected, you may need to interrupt this automatic boot process.

To clear the EFI BootNext autoboot variable, press any key before the Boot Manager is displayed. This feature is added to assist in editing the Windows OS loader during installation. After pressing any key the following message displays.

```
Loading BootNext option...
```

```
Press any key to cancel EFI BootNext autoboot.
```

```
A key was pressed before loading the BootNext variable  
Do you want to stop the BootNext process [Y-Yes N-No]?
```

I/O on the HP Integrity Server rx8620/rx7620

HP midrange IA64 servers, the HP Integrity rx8620/rx7620 servers, have a specific mechanism that they use to perform I/O at the EFI shell. This affects the way that partners perform OS installations and where and when they see I/O devices. The HP Integrity rx8620/rx7620 servers observe the following set of rules with regard to I/O.

1. By default, only the core I/O device on each cell is connected at boot time. None of the slots are searched or connected. Therefore, none of the I/O devices on those slots are visible to EFI commands. At the EFI shell, you can use the **search** command to search a particular slot or search all the slots on the machine. After you do this, the I/O device on those slots becomes visible.
2. If the OS installer you are using is of the type that specifies incomplete hardware paths for the boot variables, the boot manager will take the following actions at boot time.
 - a. For each boot variable the boot manager encounters, it connects the device specified by that variable. If the device has an incomplete hardware path, and it is a GUID partition, then proceed to the next step.
 - b. Search an internal database for the GUID that is specified by the boot variable. If it is found in the database, then the hardware path associated with the variable in the database is connected and the process is complete. If the hardware path cannot be connected, then the database entry is invalid and it is purged. Go to the next step if there is no entry in the database or if the entry is invalid.
 - c. Search the currently connected devices for the GUID specified by the boot variable. If it is found, then update the internal database with the GUID and its associated hardware path and the process is complete. If it is not found, go to the next step.
 - d. If the GUID cannot be found on any of the currently connected devices, connect all the devices and search for the GUID again. All the devices on the system are connected and another search is made for the GUID. If the GUID is found, then the internal database is updated with the GUID and its associated hardware path. For each boot after this, the machine will only connect the hardware path and the boot time is faster. If the GUID is not found, the media does not exist on the machine and it will not boot.
3. When the machine connects a boot variable, all the partitions on the media that contain the GUID are connected. This solves the problem of installation on multiple partitions on the same media.
4. All this information is stored in the NVM of the machine. If you clear the NVM, all the settings are lost, that is, boot variables, the GUID database, and ACPI settings.

EFI Overview

Extensible Firmware Interface

The purpose of the Extensible Firmware Interface (EFI) is to define a common boot environment abstraction layer, which includes EFI drivers, EFI applications, and EFI OS loaders.

The EFI platform interfaces are intended to provide an interface between the platform and the OS that is to boot on the platform. The EFI specification also provides the interface between diagnostics or utility programs and the platform; however, it does not attempt to implement a full diagnostic OS environment. It is envisioned that a small diagnostic OS-like environment can be easily built on top of an EFI system. Such a diagnostic environment is not described in this guide. The EFI, by default, does not support pointing devices for input or bitmaps on output. Microsoft supports EFI as the only firmware interface for booting 64-bit Windows operating systems. Because 64-bit Windows will not boot with the BIOS or the System Abstraction Layer alone, EFI is a requirement for all HP Integrity Server-based systems.

GUID Partition Table Disks

Microsoft Windows Server 2003 requires GPT disks. Compared to the master boot record (MBR) disk partitioning style, which supports volumes up to 2 terabytes in size and up to four primary partitions per disk (or three primary partitions, one extended partition, and unlimited logical drives), GUID Partition table disks (GPT) support volumes up to 18 exabytes in size and up to 128 partitions per disk. Unlike MBR partitioned disks, data critical to platform operation is located in partitions instead of unpartitioned or hidden sectors. In addition, GPT partitioned disks have redundant primary and backup partition tables for improved partition data structure integrity.

Supported File Systems on GPT

The supported file systems on GPT are NTFS, FAT, and FAT32. EFI supports FAT and FAT32.

Disk Management

You can perform the same tasks on GPT disks as you can on MBR disks with the following exceptions:

- Only the Microsoft Windows Server 2003, 64-bit OS supports GPT disks. You cannot move GPT disks to computers running the 32-bit version of Microsoft Windows Server 2003. From Disk Management on computers running a 32-bit version of Microsoft Windows Server 2003, GPT disks appear as basic MBR disks with a single partition covering the whole disk, but the data on the partition cannot be accessed.
- The OS loader and boot partition must reside on a GPT disk. Other hard disks can be either MBR or GPT.

-
- You cannot use the GPT partitioning style on removable media, detachable disks that use Universal Serial Bus (USB) or IEEE 1394 (also called FireWire) interfaces.
 - You cannot use the GPT partitioning style on cluster disks that are connected to the shared SCSI or Fiber Channel buses used by the Cluster Service.

However, you can do the following:

- You can have both MBR and GPT disks in a single dynamic disk group.
- You can also have a mix of basic GPT and MBR disks, which are not part of disk groups.
- You can convert an MBR disk to a GPT disk and vice versa only if the disk is empty.

EFI System Partition

The EFI System Partition (ESP) contains the files necessary to boot the system, such as drivers.

Creation and Size of the ESP Partition

The creation of the ESP is performed through the re-installation media. It will be 100 MB in size.

Contents of the ESP

The ESP should include only files required for booting an OS, platform tools that run before the OS boot, or files that must be accessed before the OS boot, for example, in performing pre-boot system maintenance. Other value-add files or diagnostics used while the OS is running should not be placed in the ESP. It is important to note that the space in the ESP is a limited system resource; its primary purpose is to provide storage for the files necessary to boot the OS. HP recommends that you store offline diagnostic tools and other EFI utilities in the HP Service Partition (See the section “HP Service Partition”).

NOTE: Microsoft places the loader, and other files necessary to boot the OS, in the ESP.

Location of the ESP

The ESP should be first on the disk. While there are no architectural requirements, there are numerous reasons why it is beneficial to place the ESP first. The primary reason for this is that it is impossible to span volumes when the ESP is logically between the two data partitions you are attempting to span.

Accessing the ESP

ESP is accessible from the Windows OS by using the `mountvol` command.

In Windows, get a command prompt by clicking on **start**, **run**, and typing **command**.

At the prompt type: `mountvol x: /s` where **x** is any free drive letter.

This will map the **x:** drive as your ESP. You may then access the ESP through Windows Explorer in order to transfer files between Windows and the ESP. Files that are stored on the ESP may be accessed through the EFI shell.

NOTE: Space in ESP is limited and is needed for successful OS boot. Do not store non-essential files on this partition.

HP Service Partition

The HP Service Partition (HPSP) is created by the re-installation media. This partition is created to hold the diagnostic tools that are provided on the Offline Diagnostics and Utilities CD. To populate this partition, insert the Offline Diagnostics and Utilities CD, and follow the prompts.

Microsoft Reserved Partition

The Microsoft Reserved Partition (MSR) reserves space on each disk drive for subsequent use by the OS software. GPT disks do not allow hidden sectors. Software components that formerly used hidden sectors now allocate portions of the MSR for component-specific partitions. For example, converting a basic disk to a dynamic disk causes the MSR on that disk to be reduced in size and a newly created partition holds the dynamic disk database. Every GPT disk must contain an MSR. It is particularly important that the MSR be created before other primary data partitions.

Creating the MSR

The MSR is created by the re-installation media and by the Windows OS automatically.

NOTE: The size of the MSR becomes smaller as it divides into other partitions. The MSR capacity is subject to change. On drives less than 16GB in size, the MSR is 32MB. On drives greater than or equal to 16GB, the MSR is 128MB.

EFI Shell Commands

Most shell commands can be invoked from the EFI shell prompt. However there are several commands that are only available for use from within batch script files. The Batch-only column indicates whether the command is available only from within the script files. The following sections provide more details on each of the individual commands. Some of these commands may not be available in some models.

EFI Shell Commands

Command	Batch-only	Description
alias	No	Displays, creates or deletes aliases in the EFI shell
attrib	No	Displays or changes the attributes of files or directories
bcfg	No	Displays/modifies the driver/boot configuration
break	No	Executes a debugger break point
cd	No	Displays or changes the current directory
cls	No	Clears the standard output with an optional background color
comp	No	Compares the contents of two files
Connect	No	Binds an EFI driver to a device and starts the driver
Cp	No	Copies one or more files/directories to another location
Date	No	Displays the current date or sets the date in the system
Dblk	No	Displays the contents of blocks from a block device
Devices	No	Displays the list of devices being managed by EFI drivers
Devtree	No	Displays the tree of devices that follow the EFI Driver Model
Dh	No	Displays the handles in the EFI environment
Disconnect	No	Disconnects one or more drivers from a device
Dmem	No	Displays the contents of memory
Dmpstore	No	Displays all NVRAM variables
Drivers	No	Displays the list of drivers that follow the EFI Driver Model
Drvcfg	No	Invokes the Driver Configuration Protocol
Drvdiag	No	Invokes the Driver Diagnostics Protocol
Echo	No	Displays messages or turns command echoing on or off
Edit	No	Edits an ASCII or UNICODE file in full screen.
EfiCompress	No	Compress a file
EfiDecompress	No	Decompress a file

continued

EFI Shell Commands *continued*

Command	Batch-only	Description
Err	No	Displays or changes the error level
Exit	No	Exits the EFI Shell
for/endfor	Yes	Executes commands for each item in a set of items
getmtc	No	Displays the current monotonic counter value
goto	Yes	Makes batch file execution jump to another location
guid	No	Displays all the GUIDs in the EFI environment
help	No	Displays commands list or verbose help of a command
hexedit	No	Edits with hex mode in full screen
If/endif	Yes	Executes commands in specified conditions
load	No	Loads EFI drivers
LoadBmp	No	Displays a Bitmap file on the screen
LoadPciRom	No	Loads a PCI Option ROM image from a file
ls	No	Displays a list of files and subdirectories in a directory
map	No	Displays or defines mappings
Memmap	No	Displays the memory map
mkdir	No	Creates one or more directories
mm	No	Displays or modifies MEM/IO/PCI
mode	No	Displays or changes the mode of the console output device
mount	No	Mounts a file system on a block device
Mv	No	Moves one or more files/directories to destination
OpenInfo	No	Displays the protocols on a handle and the agents
Pause	No	Prints a message and suspends for keyboard input
Pci	No	Displays PCI devices or PCI function configuration space
Reconnect	No	Reconnects one or more drivers from a device

continued

EFI Shell Commands *continued*

Command	Batch-only	Description
Reset	No	Resets the system
Rm	No	Deletes one or more files or directories
Set	No	Displays, creates, changes or deletes EFI environment variables
Setsize	No	Sets the size of a file
Stall	No	Stalls the processor for some microseconds
Time	No	Displays the current time or sets the time of the system
Touch	No	Sets the time and date of a file to the current time and date
Type	No	Displays the contents of a file
Unload	No	Unloads a protocol image
Ver	No	Displays the version information
Vol	No	Displays the volume information of the file system

Manageability Processor Configuration

Details on how to navigate through the MP interface are available in the *HP Integrity Server Service Guide*.

Setting the MP IP address and associated parameters

1. From the rear of the system, connect a null modem cable to the local console serial port (MP port). Connect the other end of the Null Modem Cable to one of the COM ports on Terminal Client system (for example, COM1).
2. Run a VT100 terminal emulator with the following port settings:
Bits per second: 9600
Data bits: 8
Parity: none
Stop bits: 1
Flow Control: Xon/Xoff
3. Start the emulator and press **enter**. You should see the MP login prompt.
4. Enter **Admin** for both the MP Login and MP Password..
5. From the MP> prompt type **cm**.
6. From the MP:CM> prompt type **ls** to see current IP address settings.
7. From the MP:CM> prompt type **lc** to set IP address settings.
8. From the MP:CM> prompt type **sa** to change access parameters. The following are the parameters and the default settings:

T - Telnet access : Enabled.
M - Modem access : Disabled.
W - Web Console : Enabled .
N - Network Diagnostics : Enabled.
I - IPMI Lan access : Enabled.

NOTE: Once the IP address is set you can remotely access the MP using telnet or a similar application.

Modifying MP Users and Passwords

To change, add, or delete users and passwords from the MP:CM> prompt, type **so**, then **2** .

Navigating from the MP

1. To leave the MP Command Menu, type **ma** at the MP:CM> prompt.
2. From the MP> prompt you will have the following choices:

MP MAIN MENU:

CO: Consoles
VFP: Virtual Front Panel
CM: Command Menu
CL: Console Logs
SL: Show Event Logs
FW: Firmware Update
HE: Help
X: Exit Connection

3. To access the EFI Shell and Boot Manager, type **co** at the MP> prompt.
4. To access the Boot Manager from the EFI Shell, type **exit**. To return to the EFI Shell, highlight **EFI Shell** and press **enter**.
5. To get back to the Manageability Processor menu, press the **Ctrl+B** keys from either the EFI Shell environment or Boot Manager.

Additional information on MP use is found in the *HP Integrity Server Service Guide*.

Troubleshooting Tips for Pre-installation

Tip 1. HDD sync rate

During boot time, when the controllers are initialized, verify that the sync rate on the HDDs is **80MB/sec**. If this sync rate is not seen during a post, there may be a physical problem with the HDD, enclosure, or the controller.

Tip 2. FS numbering

From the EFI, your FS (file system) numbers may change (that is. FS0 may become FS1) especially if you add or remove media from the DVD drive. Do not assume the FS number assignment always stays the same.

Tip 3. Hard Disk Drive Capacity Support

Compared to the master boot record (MBR) disk partitioning style, which supports volumes up to 2 terabytes in size and up to 4 primary partitions per disk (or three primary partitions, one extended partition, and unlimited logical drives), GPT supports volumes up to 18 exabytes in size and up to 128 partitions per disk.

NOTE: This is specific to EFI.

Tip 4. Using diskpart.efi to Partition a New GPT Drive

When configuring the HP Smart Array controller as a storage drive, use a stripe size of 64 k or 128 k. When creating a new GPT partition with diskpart.efi always leave 2 MB free at the end of the drive. For example, if the size available is 17365 GB, then only use 17363 GB, and always leave 2 MB free at the end of the last partition on the drive. HP recommends doing the same thing for hard disk drives connected to the SCSI controllers.

NOTE: Diskpart.efi is a third-party utility available on the HP Smart Setup CD. The Microsoft Windows Server 2003 FORMAT command cannot be used to format an EFI partition created by Diskpart.efi. The efimt.efi command can format a disk partition created also by Diskpart.efi.

Tip 5. How to Check Your System Firmware

In the EFI Shell, type the following command:

```
Shell:>info fw
```

This command will show all your system firmware versions.

Tip 6. Initializing Graphics Devices on HP Integrity Servers

Graphics devices work if you are in Windows acpiconfig windows mode. A graphics card should be in the system and the firmware automatically initializes and loads it.

The HP Integrity Server does not support more than one graphic device in a partition. The graphic device must be in the I/O chassis attached to the root cell.

Tip 7. Server does not respond to power or reset requests

If your server does not respond to power or reset requests by the MP, you may need to remove and reconnect your physical power cables.

II. Re-installation of the OS

This section covers how to use the re-installation media to either restore your system to a fresh installation of Microsoft® Windows® Server 2003, or to install Windows on an existing system that previously ran HP-UX or Linux operating system (OS).

Information in this section is also helpful when setting up a system that has an OS pre-installed. Please refer to the sections discussing completion of the mini-setup process.

1. Critical Information (steps to be performed prior to booting Windows)

While using the re-install media, you may experience unusual behavior, or problems. This section covers those issues.

2. Installation

- a. Installing Microsoft Windows Server 2003 with an Operating System Re-install Media Provided by HP
- b. Starting Up the System after Re-installing the OS from the HP Re-install Media
- c. Headless Mini-Setup Boot
- d. Re-installing Using the Headless Console

3. Troubleshooting Tips

Requirements

- HP Re-installation media
- An HP Integrity server that has successfully configured hardware
- The instructions that are laid out in the 'Pre-Operating System' section have been successfully completed.
- The HP Integrity Server, rx8620 and rx7620 servers are EFI 1.10 compliant systems. Due to differences between the EFI revision 1.10 and the previous EFI revision 1.02, this QFE is required to support Windows installation via PXE and Remote Installation Services on the HP Integrity Server, rx8620 and rx7620 platforms. Look under \contents\utilities\qfe\RIS PXE_QFE on the Smart Setup media 2.0 or later for a quick fix from Microsoft and instructions on how to work around this issue.

Critical Information

PNP Delay During OS Installation

PNP delay takes at least 10 to 15 minutes per I/O chassis at installation time.

It will take 30 to 90 minutes to complete the installation process because the OS PNP engine takes about 10 to 15 minutes to complete initializing each I/O chassis with I/O cards fully populated.

Avoiding Confusion on Which Drive is Receiving the Image

In a local installation to a box with multiple HDDs, it is best to remove all the drives but the target drive to avoid confusion as to which drive is about to receive the image.

During a remote installation, in the absence of distinguishing volume labels, it is easy to confuse the volumes and even destroy a drive while selecting the target partition.

NOTE: HP Server Agents should be installed after all devices are connected otherwise fibre channel agents may not install.

The EFI VOL command only works with FAT32 partitions but labeling the system partition and all other FAT32 partitions should reduce the risk of this confusion considerably.

Installation Planning Sheet

Complete the following planning sheet before you begin the installation process. You will need this information in order to answer questions that you will be asked during the installation process.

Partition Table: _____ (List target partitions)

User Name: _____

Organization: _____

Licensing: _____

Computer Name: _____

Admin Password: _____

Date Time Zone: _____

Workgroup or Domain Name: _____

Product Key: _____

Capacity Planning/Performance Baselineing

The best practices of Capacity Planning / Performance Baselineing are beyond the scope of this document. However, it is important to have performance data from the server so planning for extra capacity or troubleshooting sudden performance problems can be done more readily. Performance baselining involves recording and storing performance data when performance is acceptable, in order to compare it to unacceptable performance. Archived performance logs can be invaluable data for troubleshooting problems.

The following counters are a good starting point for capacity planning:

Object	Counters
Processor	Percent of Processor Time
Memory	Pages/sec, Available Bytes, Commit Limit, Committed Bytes, Pool Non-Paged Bytes
Paging File	Percent of Usage Peak
Physical Disk	Percent of Disk Time, Avg. Disk Seconds/Transfer
Logical Disk	Percent of Free Space
Network Segment	Percent of Network Utilization
Network Int.	Bytes sent, received, and total

NOTE: This is by no means a definitive list of counters to include

The data obtained from these objects can be used for both support and planning purposes. The data can be reviewed each day to see if the thresholds are being hit.

For example, if the percent of Processor time is > 80%, or if the Available bytes are < 1 MB on a File and Print server, or if the Physical Disk percent of Disk Time is > 67%, or if the percent of Free Space is < 5%, or if the Network Segment percent of Network Utilization is > 40% on an Ethernet segment for an extended period of time, the problem management group within a company may want to know about the system that is having the problem.

Installation Methods

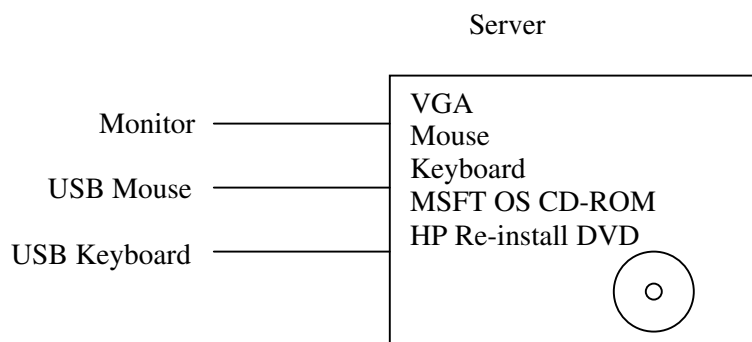
There are two ways to install Windows Server 2003, Datacenter Edition. They are:

- Local install with video/mouse/keyboard through the use of the re-installation media provided by HP, via VGA
- MSF Remote/Express Install and HP Re-install (Headless connection)

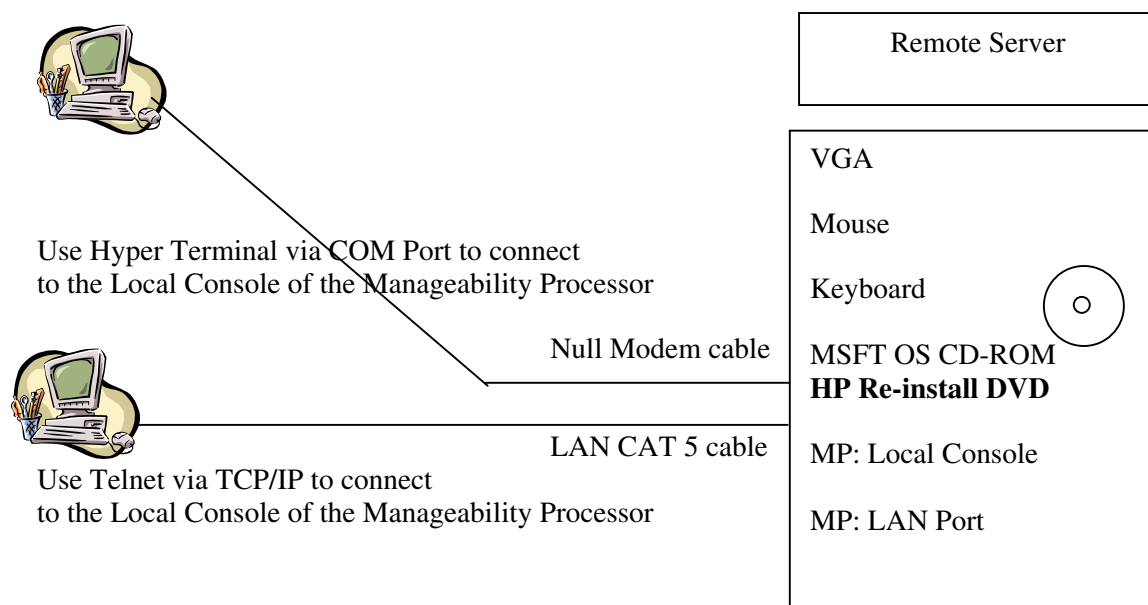
Before you begin the operating system installation, verify the following:

- Verify that you have successfully configured your partitions. Check for the number of CPUs and DRAM detected via the Shell> info all.
- The server's video controller is working (with a VGA card).
- The server's video controller displays the EFI Boot Manager menu and EFI Shell prompt (with a VGA card).
- The server's USB keyboard is functioning in the EFI Boot Manager menu and EFI Shell prompt.

Local Install with Video/Mouse/Keyboard



MSF Remote/Express Install and HP Re-install



Booting HP Integrity Servers Preloaded with Microsoft Windows Server 2003 Operating System

Setting Up the Server's Video and Basic USB Input Devices

1. Insert the USB keyboard in one of the server's USB connectors.
2. Insert the USB mouse in one of the server's USB connectors.
3. Connect a display monitor to the server's video controller.

Instructions

Initial System Startup

Step	Goal	How
1	Power on the server and answer the Windows mini-setup questions.	<ol style="list-style-type: none">1. Power on the server.2. Windows displays a popup screen indicating that an EMS channel (this is the remote management console) is present. <p>NOTE: It may take a couple of minutes for the mouse and keyboard to start working during this phase of the startup process. Please wait.</p> <p>If you wish to complete the installation from the EMS channel, then do nothing at the local console and proceed to enter the following information from the EMS console.</p> <p>If you wish to complete the installation from the local console, click OK and proceed to enter the following information from the local console.</p> <ol style="list-style-type: none">3. Click Next in the Welcome to the Windows Setup Wizard window.4. Click I Accept, and then click Next in the License Agreement window.5. Click Next in the Regional and Language Options window.6. Enter your name and organization, and click Next in the Personalize Your Software window.7. Enter the product key and click Next in the Your Product Key window. This ID is located on the label attached to your computer.8. Select the appropriate license purchased, and click Next in the Licensing Modes window.9. Enter the computer name and password and click Next in the Computer Name and Administrator Password window.10. Select the correct date and time zone, and click Next in the Date and Time window.

continued

Initial System Startup *continued*

Step	Goal	How
2	Complete the Setup Wizard and boot Windows.	<ol style="list-style-type: none">1. The server will reboot and go into the EFI BOOT manager.2. The server boots immediately to Windows.3. Press the Ctrl+Alt+Del keys. Enter the password to log in as an Administrator.4. Double-click on the Online Reference shortcut.5. Read the information provided here. If desired, you can install optional utilities from this section.

Installing Microsoft Windows Server 2003 with an Operating System Re-install Media Provided by HP

If your system has the USB EFI firmware and driver loaded then you should be able to navigate through the EFI Shell and perform the installation without setting up the Hyper Terminal VT100 terminal emulator. The VT100 terminal emulator allows you to see and navigate in the EFI Boot Manager, EFI Shell environments, and the text setup section of the OS only.

Setting Up the Server's Video and Basic USB Input Devices

1. Insert the USB keyboard in one of the server's USB connectors.
2. Insert the USB mouse in the one of the server's USB connectors
3. Connect a display monitor to the server's video controller.
4. Power the server to test the video and USB functions in the EFI shell environment.
5. Verify that the USB keyboard is working in the EFI Shell and the video can display the EFI Boot manager and EFI Shell screen then go to "Install the Operating System Locally."

Re-installing the OS from the HP Re-install Media

Use the following table to re-install the OS from the HP re-install media.

Re-installing the OS from the HP Re-install Media

Step	Goal	How
1	Prepare the server and boot from the Re-install media.	<ol style="list-style-type: none">1. Configure your boot controller and drive. If you are using a RAID adapter, follow the RAID installation guide to prepare the adapter and configure the RAID type. <p>WARNING: The installation will be done to the boot controller detected as adapter zero drive zero. It is recommended that you remove all non-target internal drives but the one on the boot controller and disconnect or turn off all external storage before starting the re-installation process. Doing this makes it easier to install to the correct drive. If you do not do this you may not be able to install the device you wish to boot from. This is a limitation of the Windows setup.</p> <ol style="list-style-type: none">2. Insert the HP Re-installation Media in the DVD drive.3. Boot from this media by doing one of the following:<ul style="list-style-type: none">• Select Bootable DVD from the EFI boot manager, if one is present.-OR-<ul style="list-style-type: none">• Select EFI Shell and type the following commands.4. Select the DVD file system. For example, type: FS1 : <CR>5. Start the loader by typing setupldr<CR> .
2	Restore the system.	<ol style="list-style-type: none">1. Click Re-install.2. Enter the desired partition size: A=16 G B=32 G C=Max (Maximum drive size)3. Click OK to continue.4. Wait until the files are copied from the DVD to the hard drive.<p>NOTE: The restore process will display 99% complete for a substantial amount of time. Do not power off the server. Wait until this process is completed.</p>5. Read the message displayed.6. At the dialog box, click OK to continue.
3	Exit the Re-install media and boot Windows.	<ol style="list-style-type: none">1. Click Exit to reboot the server.2. The server boots immediately to Windows.3. Follow the "Initial system setup" instructions listed in the "Initial System Startup" table.

Starting Up the System after Re-installing the OS from the HP Re-install Media

Refer to the following table for directions on initial system startup after re-installing the OS from the HP re-install media.

Initial System Startup after Re-installing the OS from the HP Re-install Media

Step	Goal	How
1	Power on the server and answer the Windows Mini-setup questions.	<p>1. Power on the system. Windows displays a popup screen indicating that an EMS channel (this is the remote management console) is present.</p> <p>Note: It may take a couple of minutes for the mouse and keyboard to start working during this phase of the startup process. Please wait.</p> <p>2. If you wish to complete the installation from the EMS channel, then do nothing at the local console and proceed to enter the following information from the EMS console.</p> <p>If you wish to complete the installation from the local console, then click OK and proceed to enter the following information from the local console.</p> <p>3. Click Next in the Welcome to the Windows Setup Wizard window.</p> <p>4. Click I Accept, then click Next in the License Agreement window.</p> <p>5. Click Next in the Regional and Language Options window.</p> <p>6. Enter your name and organization in the proper fields, and click Next in the Personalize Your Software window.</p> <p>7. Enter the product key ID, and click Next in the Your Product Key window. This ID is located on the label attached to your computer.</p> <p>8. Select the appropriate license purchased and click Next in the Licensing Modes window.</p> <p>9. Enter the computer name and password in the proper fields, and click Next in the Computer Name and Administrator Password window.</p> <p>10. Select the proper date and time zone, and click Next in the Date and Time window.</p>

continued

Initial System Startup after Re-installing the OS from the HP Re-install Media *continued*

Step	Goal	How
2	Complete the Setup Wizard and boot Windows.	<ol style="list-style-type: none">1. The server will reboot and go into the EFI BOOT manager. The system boots immediately to Windows.2. Press the Ctrl+Alt+Del keys. Enter the password to login as an Administrator.3. Double-click Online Reference. Read the information provided here. If desired, you can install optional utilities from this section.

Headless Mini-Setup Boot

Microsoft Windows Server 2003 uses the remote console port to interact with the user during the Mini-Setup phase of the boot process. Microsoft refers to this as EMS (Emergency Management Services). HP refers to this port as the headless console port.

This Mini-Setup phase is encountered the first time you boot a server after the image is restored with the re-install media.

The following instructions provide a step-by-step process to complete the OS boot using the headless console MP port. Please note that this could either be the LAN or serial port on the MP card.

Please note the following:

1. The Windows XP client includes the terminal server client in the accessories\communication folder.
2. Microsoft Windows 2000 requires that you install the TS client.
3. This document does not provide details on how to run and configure the hyperterminal.
4. This document does not provide details on how to configure the MP console ports.

Connect to the target system partition with the terminal emulator and go to step 5 in the section, "Re-installing using the Headless Console."

The following example connects to partition zero.

MP login: Admin

MP password: Admin <Or Whatever password>

[server name] MP> co

Partitions available:

Name

--- ----

0) Partition 0

1) Partition 1

-
- 2) Partition 2
 - 4) Partition 4
 - 5) Partition 5
 - Q) Quit

Please select partition number: 0

SAC>

Re-installing Using the Headless Console

1. Mount the DVD in the DVD-ROM drive.
2. From the remote console reset the partition.

The following example is for partition zero.

=====Start of a Reset example =====

3. MP login: Admin

MP password: Admin (or whatever your password is.)

[server name] MP> cm

[server name] MP:CM> rs

This command resets the selected partition.



WARNING: Execution of this command halts all system processing and I/O activity irrecoverably and restarts the selected partition.

Name

--- ----

- 0) Partition 0
- 1) Partition 1
- 2) Partition 2
- 4) Partition 4
- 5) Partition 5

Select a partition number: 0

Do you want to reset partition number 0? (Y/[N])Y

===== End of a Reset example =====

-
4. At the remote console select to boot DVD from EFI boot manager or type `setupldr` at the EFI prompt.
For Example:
`Shell> setupldr <Enter>`
 5. On the headless console, at the **SAC>** prompt type `CMD`.
 6. Press the **Esc+Tab** keys to switch to the new command prompt channel.
 7. Start the installation menu by typing `txtrestore`.
 8. Select the partition size.
 9. Wait for the restore to finish.
 10. Use the instructions provided on the screen on how to restart the computer.

If the Video card was removed from the system you can proceed to restart the computer now by clicking **Exit**.

11. On the main console or VGA display, if one is present, a screen will be displayed indicating that the EMS was detected. Click OK if you want to use the local console KB/MS. **Do not click OK.**
12. Go to the remote console and wait for the **SAC>** prompt.
13. Press the **Esc+Tab** keys to switch to channel one. You will get the following information:

```
*****
Name:                               Unattended Setup Channel
Description:                         Provide parameters to automate Setup
Type:                               VT-UTF8
Channel GUID:                       0cfc0ee2-3a27-11d7-8484-806e6f6e6963
Application Type GUID: 00000000-0000-0000-0000-000000000000

Press <esc><tab> for next channel.
Press <esc><tab>0 to return to the SAC channel.
Use any other key to view this channel.
*****
```

14. Press any key to start the channel data link

Press PAGE DOWN for next page.

15. Press the **F8** key to accept the license agreement.

NOTE: F8 = <Escape>8 is for the Windows default terminal emulator. Also, make sure you press the number 8 within two seconds after pressing <Esc>. Otherwise, the system will reboot because it only read the <Esc> key.

The 25-character Product Key appears on the lower section of your Certificate of Authenticity.

Type the Product Key below in the form

XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

16. Product ID: Enter the PID with a - as the separator, for example:

>> XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

Enter the password that will be used for the Administrator Account on this machine. This field must not be blank. Administrator Password:

17. xxxxxx (This is an example)

Please re-enter the Administrator password.

Password Confirmation:

18. xxxxxx (This is an example)

Setup will now proceed in an automated fashion.

- * Wait for MiniSetup to complete.
- * The system will reboot.
- * The system shows the SAC> prompt.

* If you don't have a DHCP server, obtain the IP address to connect with terminal server services. Please note that the "I" command can also be used to change the IP Address to match your network.

SAC>i

Net: 2, Ip=xxx.xxx.x.xxx Subnet=xxx.xxx.xxx.x
Gateway=xxx.xxx.x.x

*Open

Windows XP or Windows 2000 terminal server client and connect to xxx.xxx.x.xxx and change the computer name and IP address if needed.

When headless installation is done the registered user and company names are not configured. Please perform the steps listed below to enter the appropriate information.

1. Open the **OnlineReference** page on the desktop.
2. Scroll to the bottom of display and click the hotlink **c:\hputils\usercompanyname.com**.
3. Click **Open**
4. Answer each prompt with the company name and user name.
5. Confirm information and click **OK**.

Run `systeminfo.exe` from the command prompt to verify the changes.

Fibre Channel Host Bus Adapter (HBA) driver Smart Component Installation

Windows Server 2003 does not include the HP supported Host Bus Adapter driver. The latest Fibre Channel Host Bus Adapter (HBA) driver Smart Component can be found on the internet at www.hp.com/support/itaniumservers and on the Smart Setup media that shipped with the server.

HP StorageWorks HBA Driver Requirements

- The HP Fibre Channel Smart Component installation of the HBA driver is required.
- The Smart Component correctly configures the HBA's parameters optimally for HP StorageWorks arrays. The Fibre Channel Smart Component also installs the MSA, EVA and MA support files.
- The Smart Component creates a log file in the \CPQSYSTEM folder after execution. This log file will provide information about the installation results.
- Executing the Smart Component using the GUI method will provide information used to determine if the driver needs to be updated or is current.

Consequences of incorrect HBA driver settings

- Tape backups may fail or not complete due to the ResetTPRLO parameter.
- In a multipath environment, failovers to alternate paths may not occur in a timely manner. HP multipathing software was designed to optimize failover scenarios.
- Data loss
- Maximize performance

NOTE: See the HP storage web site at <http://welcome.hp.com/country/us/en/prodserve/storage.html> for details regarding driver parameters settings and definitions.

The Smart Component should be run in the following situations:

6. Immediately following the Boot from SAN installation that utilized the EFI Based Setup Utility (EBSU) on the Smart Setup media that shipped with your server.
7. After installing a Fibre Channel HBA to your system and after installing using the HP Re-Install Media.
8. Anytime a Fibre Channel HBA driver needs to be updated due to a driver roll.

Immediately following the driver installation/update, the utility will prompt you to perform a reboot. A reboot is necessary for the registry changes to take effect.

NOTE: If the system was preloaded with at least one Fibre Channel HBA present, there is no need to run the smart component utility.

Troubleshooting Tips for Re-installation of the OS

Tip 1. A Serial yellow bang (yellow alert icon) might appear under the "Non-Plug and Play Drivers" in the Device Manager when hidden devices are enabled

The Serial yellow bang appears only if the Show hidden devices is enabled in the device manager under the Non-Plug and Play Drivers in the Device Manager:

If no serial legacy device is found in the system the OS will generate a yellow bang for the Serial option. Since the HP Integrity server rx8620/rx7620 does not have a legacy serial device this will always happen.

Tip 2. Do not use the 16 GB Option when using the Re-install Media

The system partition must be created on a 32GB or larger disk drive. When using re-install media, administrators and CEs should use either the 32 GB or the max drive size option when configuring the system volume. Using the 16 GB option may result in an inability to create a kernel memory dump in the event of a system failure unless the page file size is manually configured afterward. Additionally, manual configuration of the page file size when using the 16 GB option will still result in a page file size of less than 20 GB, which is the minimum recommended size.

Tip 3. Microsoft Windows Server 2003, Datacenter Edition, Driver Signatures

Microsoft Windows Server 2003, Datacenter Edition, checks for digital signatures on driver files to help maintain system integrity. During the installation or update of a driver, if there is no matching signature file Microsoft Windows Server 2003, Datacenter Edition, displays a Digital Signature not Found dialog box.

For future Microsoft Windows Server 2003, Datacenter Edition, product releases, HP may ship drivers without signature files. All Microsoft Windows Server 2003, Datacenter Edition, drivers provided by Hewlett-Packard are submitted to Microsoft for certification testing. Upon completion of testing, Microsoft produces signature files. HP then posts the revised driver package on the HP web site at <http://www.hp.com/support/itaniumservers>.

If a signature warning is displayed during installation of a driver, you may override the warning. We recommend that you check the HP web site for the latest driver package. If available, install the new driver.

You can elect to have your Microsoft Windows Server 2003, Datacenter Edition, ignore signatures. Right-click on **My Computer**, select **Properties>Hardware>Driver Signing**. Select **Ignore—Install the software anyway and don't ask for my approval**. This is helpful if you are setting up multiple systems.

Digital signatures are a powerful way to ensure system integrity as you add drivers to your system (whether provided by Hewlett-Packard or others).

Tips and Tricks for Partitionable Systems

Error messages when using FRU LED

HP Integrity servers rx8620 and rx7620 do not have I/O chassis or cabinet LEDs. Hence, when using FRU LED you may see the following error messages:

"Error: LED operation on cabinet X failed"

"Error: LED operation on component X failed."

III. Configuring Windows

This section will assist you in configuring Microsoft® Windows® on your HP Integrity server after it has been successfully installed either via the re-install media, or if it has been shipped pre-installed from HP.

Information in the following sections give you:

1. Critical Information
2. Important tips for successful Windows setup
3. Configuring the OS after the installation is complete
4. Troubleshooting Tips

Requirements

An HP Integrity server fully setup and configured with Microsoft Windows Server 2003 installed.

Critical Information

NVR Boot – Boot Option Maintenance

This is similar to IA32 boot.ini. See “Setting up the NOVESa boot option” section.

Tips for Configuring Windows

Restarting Windows from the Service Access Console (SAC) Prompt

When restarting the system from a headless connection via the SAC prompt, `SAC>restart` or `SAC>shutdown`, Windows will display a dialog box at the next login that the system experienced an unexpected shut down.

If you want to do a controlled shutdown, bring up a **cmd** prompt at the SAC prompt and use the **shutdown.exe** so that you can do a controlled shutdown as presented below. If the system hangs, then the SAC hangs too.

How to Shut Down the OS from the SAC> Prompt

1. From the SAC> prompt, create command channel.

```
SAC>cmd
```

```
The Command Prompt session was successfully launched.
```

```
SAC>
```

```
EVENT:   A new channel has been created. Use "ch -?" for channel help.
```

```
Channel: Cmd0001
```

```
SAC>
```

2. Simultaneously press **ESC** and **TAB** keys to switch to channel CMD0001

```
Name:                               Cmd0001
```

```
Description:                        Command Prompt
```

```
Type:                               VT-UTF8
```

```
Channel GUID:                       39ffb321-b8b1-11d7-8335-505054503030
```

```
Application Type GUID: 63d02271-8aa4-11d5-bccf-00b0d014a2d0
```

```
Press <esc><tab> for next channel.
```

```
Press <esc><tab>0 to return to the SAC channel.
```

```
Use any other key to view this channel.
```

3. Press any key to open the channel then type in the administrator username and password.

```
Please enter login credentials.
```

```
Username: Administrator
```

```
Domain   :
```

```
Password: *****
```

4. Now use shutdown.exe to shutdown or restart.

```
Example of how to restart immediately:
```

```
Microsoft Windows [Version 5.2.3790]
```

```
(C) Copyright 1985-2003 Microsoft Corp.
```

```
C:\windows\system32>shutdown -r -t 0
```

```
-r - Shutdown and restart the system
```

```
-t 0 - No delay in shutdown the system
```

Setting the NOVESA Boot Option

NOTE: Systems preloaded using the HP preinstall media already have the NOVESA configuration added or installed with the HP re-install media.

There is an issue with the legacy VGA driver in Windows that requires disabling extended VESA modes during installs using the /NOVESA boot option. This is done automatically as part of the pre-loaded Windows installation.

Do not remove this flag. Although it is primarily needed for installation, removing it may cause a blue screen to display in the future under certain circumstances (possible examples: if you update Windows, or if you move your VGA card to a different slot, or if you add another I/O chassis to your partition).

How to Add/Remove/Verify the /NOVESA Flag in the OS Boot Loader

1. From the EFI Shell, go to the MSUTIL directory and execute the NVRBOOT.EFI command.

```
fs1:\> dir
Directory of: fs1:\

07/17/03  11:48a                127  fail_file.txt
03/25/03  05:00a            841,216  SETUPLDR.EFI
06/25/03  11:14a <DIR>             1,024  EFI
06/25/03  11:14a <DIR>             1,024  MSUtil
          2 File(s)          841,343 bytes
          2 Dir(s)
```

```
fs1:\> cd msutil
fs1:\MSUtil> nvrboot
```

NVRBOOT: OS Boot Options Maintenance Tool [Version 5.2.3683]

- * 1. Windows Server 2003, Datacenter
- 2. EFI Shell [Built-in]
- * = Windows OS boot option

```
(D)isplay (M)odify (C)opy E(x)port (I)mport (E)rase (P)ush
(H)elp (Q)uit
Select M(Modify) to modify the OS boot loader.
Select> m
```

2. Enter the OS boot option to modify.
Enter OS boot option to modify: 1

Enter VAR to modify: 2

- a. LoadIdentifier = Windows Server 2003, Datacenter
- b. OsLoadOptions = /REDIRECT
- c. EfiOsLoaderFilePath = cf5f2ddc-b885-11d7-b831-000000000000 ::
 \efi\microsoft\winnt50\ia64ldr.efi
- d. OsLoaderFilePath = e605a034-b885-11d7-b831-000000000000 :: \windows

Enter var to modify: 2

3. Retype OsLoadOptions with the /NOVESA option (to remove it from the Os Boot Loader).

Enter var to modify: 2

OsLoadOptions = /redirect/NOVESA

4. The /NOVESA is in the OsLoadOptions.
 - a. LoadIdentifier = Windows Server 2003, Datacenter
 - b. OsLoadOptions = /redirect/NOVESA
 - c. EfiOsLoaderFilePath = cf5f2ddc-b885-11d7-b831-000000000000 ::
 \efi\microsoft\winnt50\ia64ldr.efi
 - d. OsLoaderFilePath = e605a034-b885-11d7-b831-000000000000 :: \windows
5. Exit and boot the OS.

Terminal Services

Enable Terminal Services after OS Re-installation

NOTE: Systems preloaded using the HP reinstall media already have the NOVESA configuration option added.

If the DVD Restore is performed under a headless configuration, another step needs to be performed after you login to the system with terminal services.

1. Wait until the GUI setup state is completed and the OS reboots.
2. From the SAC prompt, assign an IP address for one of the NICs.

If you do not have a DHCP server, obtain the IP address to connect with the terminal server services. Please note that the “I” command can also be used to change the IP Address to match your network. However, this change only works temporarily. The user must go to the Network properties page in Windows and change the IP address parameters there and save it for the values to be permanent.

SAC>I 2, 192.168.0.255 255.255.255.0 192.168.0.1

Open Windows XP or Windows 2000 terminal server client and connect to 192.168.0.255 and change the computer name and IP address if needed.

-
3. From the remote desktop, log on to the server via the NIC that you just assigned the IP address.

Launch Remote Desktop Connection on the Client

1. Launch Remote Desktop (usually located in the Accessories Communication).
2. Enter the “IP address of the LAN on the HP Integrity Server system that connects to the corporate network.
3. Enter the Administrator name and the password in the User name and password boxes.

Console Access from the Windows Terminal Server

To view a console from Windows Terminal Server, run `mstsc.exe /console`.

How to Turn on the Terminal Services Key if it is Accidentally Turned Off

Windows is supported in a headless configuration (without a VGA graphics adapter). In lieu of connecting to the VGA console, it is possible to use terminal services. This is enabled by default in the preloaded Windows installation. If, however, this is turned off accidentally, it can be turned on in the graphic mode through the My Computer Remote tab. In the headless mode, however, the registry must be changed. For instructions on modifying the registry using the command channel see the “Remote Control Session: Launch Remote Desktop” section.

Activation of the Administrative Session via Terminal Services

When using the terminal server as an access to the graphics console, you must specify the `/console` switch to the terminal service client (`mstsc.exe`), as system events and certain dialogs are only sent to that session, and not other remote administration sessions.

Windows Kernel Debugger

Debug Cable and Adapter

The kernel debug ports of the HP Integrity Superdome, rx8620/rx7620, and rx5670 servers require an RJ45-terminated CAT-5 cable connected to the root cell of the partition under debug and a DB9 to RJ45 adapter. The kernel debug ports of all other HP Integrity servers require a DB9 Female-terminated RS-232 Null Modem Cable.

The Pin Out for the HP Integrity Superdome, rx8620/rx7620, and rx5670 kernel debug port adapters are shown in the tables below.

HP Integrity Superdome Kernel Debug Port Adapter Pin Out		
RJ45 Receptacle Pin	Wire Color	DB9 Female Pin
1	Blue	7
2	Orange	5
3	Black	NC
4	Red	8
5	Green	3
6	Yellow	NC
7	Brown	2
8	Gray (White)	NC

HP Integrity server rx8620/rx7620 Kernel Debug Port Adapter Pin Out		
RJ45 Receptacle Pin	Wire Color	DB9 Female Pin
1	Blue	4
2	Orange	8
3	Black	5
4	Red	3
5	Green	2
6	Yellow	NC
7	Brown	7
8	Gray (White)	6

HP Integrity server rx5670 Kernel Debug Port Adapter Pin Out		
RJ45 Receptacle Pin	Wire Color	DB9 Female Pin
1	Blue	1
2	Orange	3
3	Black	2
4	Red	4
5	Green	5
6	Yellow	6
7	Brown	7
8	Gray (White)	8

Windows Kernel Debug Port Enabler for HP Integrity server rx8620/rx7620

The HP Integrity server rx8620 and rx7620 require an EFI utility (kd.efi) to enable the Windows kernel debugging feature. Please refer to the “*Kernel Debug for Microsoft® Windows® Server 2003 on an HP Integrity Superdome rx8620/rx7620*” guide for detailed instructions on using this utility.

Debug Options

How to Add the DEBUG Flag in the OS Boot Loader

1. From the EFI Shell, go to the MSUTIL directory and execute the NVRBOOT.EFI command.

```
fs1:\> dir
Directory of: fs1:\

07/17/03  11:48a                127  fail_file.txt
03/25/03  05:00a            841,216  SETUPLDR.EFI
06/25/03  11:14a <DIR>          1,024  EFI
06/25/03  11:14a <DIR>          1,024  MSUtil
          2 File(s)          841,343 bytes
          2 Dir(s)

fs1:\> cd msutil
fs1:\MSUtil> nvrboot
```

2. Select **M(Modify)** to modify the OS boot loader.
Select> m
3. Enter OS boot option to modify.
Enter OS boot option to modify: 1
4. Enter VAR to modify: 2
 - a. LoadIdentifier = Windows Server 2003, Datacenter
 - b. OsLoadOptions = /REDIRECT /NOVESA
 - c. EfiOsLoaderFilePath = cf5f2ddc-b885-11d7-b831-000000000000 ::
\\efi\microsoft\winnt50\ia64ldr.efi
 - d. OsLoaderFilePath = e605a034-b885-11d7-b831-000000000000 :: \windows
 - e. Enter var to modify: 2
5. Retype OsLoadOptions with the /DEBUG /BAUDRATE=115200 option.
Enter var to modify: 2
OsLoadOptions = /REDIRECT /NOVESA /DEBUG /BAUDRATE=115200

-
6. The /DEBUG /BAUDRATE=115200 is now in the OsLoadOptions.
 - a. LoadIdentifier = Windows Server 2003, Datacenter
 - b. OsLoadOptions = /REDIRECT /NOVESA /DEBUG /BAUDRATE=115200
 - c. EfiOsLoaderFilePath = cf5f2ddc-b885-11d7-b831-000000000000 :: \efi\microsoft\winnt50\ia64ldr.efi
 - d. OsLoaderFilePath = e605a034-b885-11d7-b831-000000000000 :: \windows
 7. Exit and boot the OS.

How to Install and Run the Microsoft Debugger

For additional information go to the Microsoft website at <http://www.microsoft.com/whdc/ddk/debugging/default.msp>

Refer to the debugger documentation for setting up a kernel debug client.

Additional Information on the Windows Kernel Debugger

For additional information go to the “*Kernel Debug for Microsoft® Windows® Server 2003 on an HP Integrity Superdome rx8620/rx7620*” guide.

I/O Slot Translation

Slot numbers displayed by Windows in the hardware device manager and the system tray include the full I/O path, in addition to the slot number silk-screened on the I/O chassis. The format of the slot number is as follows:

CBHSS

Key:

C – Cabinet number

B – Bay number

H – I/O Chassis Number

SS – Two digit slot number in decimal form

NOTE: Windows suppresses leading zeroes, therefore, these digits will not appear, but are otherwise 0.

However, manageability agents display the full path of the I/O cards in a more descriptive form.

Example: PCI Slot 80101

C = “8” = I/O Cabinet #8

B = “0” = bay #0

H = “1” = Chassis #1

SS = “01” = PCI Slot #1

How to View and Edit Non Volatile RAM settings from within Windows

To view and edit NVRAM settings from within the Windows OS, go to a command prompt and type:

```
Bootcfg /?
```

Description

This command line tool allows an administrator to configure, query, change or delete the boot entry settings in the NVRAM.

Parameter List

/Copy	Makes a copy of an existing boot entry.
/Delete	Deletes an existing boot entry from the NVRAM.
/Query	Displays the current boot entries and their settings.
/Raw	Allows the user to specify any switch to be added to a specified boot entry.
/Timeout	Allows the user to change the Timeout value.
/Default	Allows the user to change the Default boot entry.
/EMS	Allows the user to configure the /redirect switch for headless support.
/Debug	Allows the user to specify the port and baud rate for debugging.
/Addsw	Allows the user to add predefined switches.
/Rmsw	Allows the user to remove predefined switches.
/Dbg1394	Allows the user to configure the 1394 port for debugging.
/Mirror	Allows the user to add information about a mirrored drive.
/List	Allows the user to List information about a drive.
/Update	Allows the user to update Partition information on a drive.
/Clone	Allows the user to clone a boot entry on a drive.
/?	Displays this help message.

You can get further information on each command by typing `bootcfg /Parameter /?`.

Accessing the EFI Partition from within the Windows OS

From a command prompt, type:

```
mountvol x: /S
```

This will map your x:\ drive as the efi partition. This will allow you to move files and data between your Windows partitions and your efi partition. Note that only one EFI partition can be mapped.

Default VGA Controller

If a partition has multiple VGA cards, then the supported VGA card should be on the root cell. Make sure that the default VGA is enabled in the Active Console Output Devices of the boot option Maintenance menu.

To check the root cell, at the EFI Shell> type the command: `ROOTCELL`. This command will display the root cell number. To determine what IO chassis is attached to the root cell type `info io` at the efi prompt.

NIC Driver Upgrade

When upgrading your NIC driver, proceed to do so through Windows, but before upgrading make a note of the IP Address of your backbone NIC. This is critical, because the backbone NIC is often assigned an IP address through DHCP, and can potentially be re-assigned a new address at the time of the driver re-install. Once you have noted this, proceed with your upgrade. This will ensure that you can connect to the backbone NIC after reboot of the server.

Adobe Acrobat Reader version does not display PDF documents in Internet Explorer on a 64-bit system

Issue: When using Smart Setup to review PDF documents in the 64-bit system via Internet Explorer, PDF files will not display successfully in Adobe Acrobat Reader.

Workaround: Either open Smart Setup in the 32-bit version of Internet Explorer, or have Acrobat Reader open PDF files in a separate window. This is done by following the steps below:

1. Open **Acrobat Reader** using the **Edit** menu.
2. Select **Preferences**.
3. Choose **Internet preferences**.
4. Uncheck the option **Display PDF in browser**.
5. Choose **OK** to save changes, and exit.
6. Restart Internet Explorer and PDF files will display successfully.

Legacy Version Control

Issue: Insight Manager 7 incorporates a feature called Legacy Version Control. This feature has a repository containing the latest software such as HP Management Agents for Windows Servers. If the HP Management Agents are installed on a HP Integrity Server with Windows Server 2003 64-Bit OS, the Legacy Version Control will display an upgrade is available when the version number installed is older than the one on the Version Control Database.

The upgrade status is incorrect as displayed in the figure below. The Legacy Version Control feature is not supported initially on HP Management Agents version up to 2.2 release and will be supported on the next Version Control Data Database update.

Workaround: Do not use the Legacy Version Control feature.

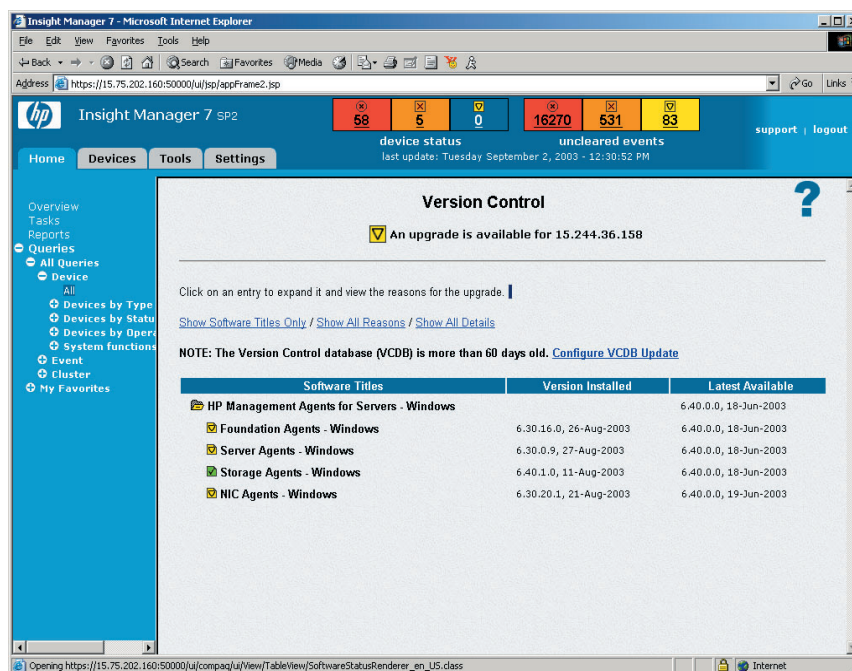


Figure 3: Legacy Version Control feature display

NOTE: The following issues were not discussed in the getting started and the setup and installation guides for the HP Integrity Server and are therefore mentioned below.

Launching the HP Insight Storage Agents and the Array Configuration Utility

Issue: When viewing the driver properties in the device manager for the Smart Array 6400 Controller, an enhanced **Tools** menu bar is displayed. This bar provides a radio button to launch the HP Insight Storage Agents and the Array Configuration Utility. Neither of these buttons function in this release of the driver.

Workaround: The preferred method to launch the HP Storage Agents is:

1. Open the Administrative Tools start menu shortcut and open Services. (This is also available by clicking **Start>Settings>Control Panel>Services.**)
2. Locate the entry named **HP Insight Storage Agents.**
3. Right-click the entry and select **Start.**

The preferred method to launch the Array Configuration Utility is:

1. Click **Start.**
2. Click **hp System Tools.**
3. Click **hp Array Configuration Utility XE.**

NOTE: To use ACU you must use Internet Explorer 32bit under "Program Files X86" in the start menu.

Adding additional SCSI controllers may cause the SNMP service to stop

Problem: If additional SCSI 1010 controllers are installed, the SNMP service may terminate by itself when the system is restarted.

Workaround: Open the service control manager. Stop and start the HP Insight Agents Services. Start the SNMP service. The Agents should now operate normally.

Upgrading the SCSI driver

To upgrade the SCSI driver upgrade each channel individually.

Completion of Windows Configuration

How to Log on to Windows in a headless configuration

1. From the SAC prompt get the IP address, if no IP address is assigned set the IP address for one of the NICs. When an IP address is set from SAC it is only temporary and will be lost on a system reboot. To permanently set the IP you need to log into Windows and set the IP.

NOTE: This is enabled by default in the systems preloaded with Windows.

SAC – Assign IP Address for LAN on HP Integrity Systems

1. At the SAC prompts, type: I. This will display the NICs in the system and their IP configuration.
Net: 3, Ip=1.1.1.1 Subnet=2.2.2.2 Gateway=3.3.3.3
Net: 2, Ip=0.0.0.0 Subnet=0.0.0.0 Gateway=0.0.0.0
2. Locate the NIC that is connected to your corporation network.
3. At the SAC prompts, type: I <NIC #> <ip> <subnet> <gateway>

i 2 xx.xx.xxx.xxx xxx.xxx.xxx.x xx.xx.xxx.x
4. From a remote desktop, logon to the HP Integrity servers via the NIC that you just assigned the IP address to.
5. To launch a remote desktop follow the instructions below.

How to Launch Remote Desktop

1. Launch Remote Desktop (usually located in **Accessories>Communication**).
2. Enter the IP address of the LAN on the HP Integrity server that is connected to the corporation network or computer name.
3. Enter the Administrator and password in the User name and password boxes.

Create SAC Channels

To create a command channel

SAC>cmd

The Command Prompt session was successfully launched.

SAC>

EVENT: A new channel has been created. Use "ch -?" for channel help.

Channel: Cmd0001

SAC>ch List all channels.

# Status	Channel Name
0 (AV)	SAC
1 (AV)	Cmd0001

To open a new channel you can simultaneously press the ESC and TAB keys to toggle through the channels or explicitly call out the channel by doing the following:

SAC>ch -si 1(channel by number) or ch -sn Cmd0001(channel by name)

SAC Channel – Login to Windows using the command channel

NOTE: To be able to see the options below the OS must be installed and loaded. Otherwise different options will show up.

SAC> ch -sn cmd0001

Name: Cmd0001

Description: Command Prompt

Type: VT-UTF8

Channel GUID: 27f30ac1-25d9-11d8-87db-505054503030

Application Type GUID: 63d02271-8aa4-11d5-bccf-00b0d014a2d0

Press <esc><tab> for next channel.

Press <esc><tab>0 to return to the SAC channel.

Use any other key to view this channel.

When the **USER NAME** option displays, type **ADMINISTRATOR**.

When the **DOMAIN** option displays, press the **ENTER** key.

When the **PASSWORD** option displays, type in the administrator password of the OS.

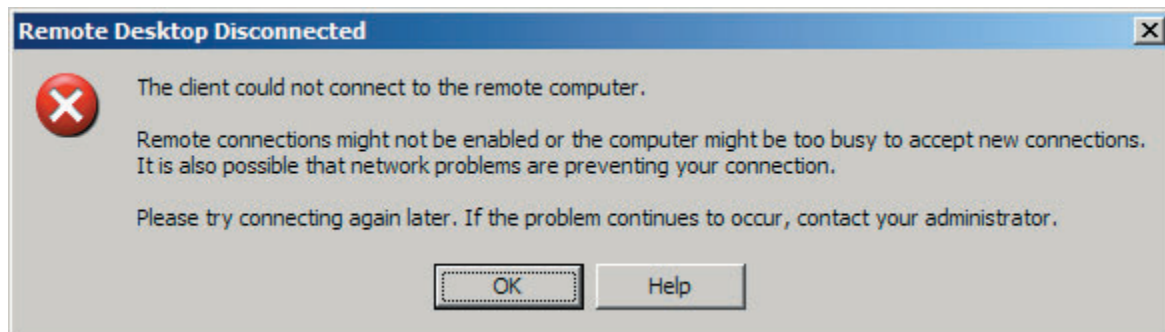
NOTE: This is the password that you entered during the Express setup.

C:\windows\system32>

You are now at the command prompt in Windows.

Remote Control Session: Launch Remote Desktop

1. Launch Remote Desktop (usually located in Accessories◇Communication).
2. Enter the IP address of the LAN on the HP Integrity server that is connected to the corporation network.
3. To find the IP address at the SAC> prompt type i. If the IP address is not set see “SAC – Assign IP Address for LAN on HP Integrity Systems” above to set the IP address.
4. Enter the Administrator and password in the username and password boxes.
5. If you encounter the following error:



The client could not connect to the Terminal server. The server may be too busy. Try connecting later.

The problem may be that Terminal Services has been disabled. To enable Terminal Services open a command channel and at the C:\windows\system32 prompt type the following:

```
reg add "HKLM\System\CurrentControlSet\Control\Terminal Server"  
/v fDenyTSConnections /t REG_DWORD /d 0 /f
```

Some parameters are case sensitive.

Hardware Status Check

Refer to the “*PCI Hot Plug User Guide for Microsoft Windows Server 2003*” for detailed information on Hot Plug.

Run the Windows Device Manager tool to identify any issues with the installed devices or resource conflicts.

1. Right click **My Computer**, and then **Manage**.
2. This brings up the Computer Management menu.
3. Click **Device Manager** under **System Tools**.
4. Verify that the devices do not have either a yellow bang (!) or a question mark (?) symbol next to it. See the following note for exceptions:
A Yellow bang (!) means that there is a resource issue with the device.
A Question mark (?) means that the device is unknown.

-
5. If neither (!) nor the (?) symbols are reported then hardware status check is complete and you can skip to step 10.

If you see the above symbols listed for any hardware, go to step 7.

6. Double-click on each of the devices with either symbol. The device properties dialog box will appear. Or, if a printer is available, use the **View>Print** option from the menu to get a report.
7. The **Device status** field indicates why the device has (!) or (?) symbols.

For example, the field may show, the drivers for this device are not installed (Code 28) . You must install the correct driver for this device in order for the device to work properly and to remove the (!) or (?) symbols. If your device drivers are on a CD-ROM/DVD-ROM skip to “Install Drivers from a CD-ROM or DVD.”

Once the appropriate driver is found, the Hardware Update Wizard copies it to the appropriate directory and installs it for the device. If the Hardware Update Wizard finds more than one version, it will display all the versions available. Make sure that you select the version that is on the floppy disk. Click **Next**.

NOTE: If the driver of the device is not digitally signed, we recommend that you check the HP web site at <http://www.hp.com/support/itaniumservers> for the latest driver package. If there is a later version available, install the new driver(s).

- a. When the Hardware Update Wizard finishes installing the driver, it will display a window indicating the wizard has finished installing the software for the device (the device name will also be displayed).
 - b. Click **Finish**.
 - c. Close the device properties window.
 - d. The **Device Manager** window has now been updated to reflect that the proper driver has been installed for the device.
The device no longer has a (!) or (?) symbol next to it.
 - e. Skip to step 10.
8. Install drivers from a CD-ROM/DVD-ROM.
 - a. Insert the CD-ROM/DVD-ROM containing the driver for the device.

NOTE: Most drivers for this system are available on the HP Smart Setup DVD. Verify you have current versions of the drivers from the re-installation media or pre-installed OS using the HP Smart Setup media.

- b. The server will recognize the CD-ROM/DVD-ROM and display the contents. Close the window.
- c. In the Device Manager, double-click the device that has a (!) or (?) symbol.
- d. Click on the **Driver** tab.
- e. Click **Update Driver**.
- f. Select **Install from a list or specific location (Advanced)** in the Hardware Update Wizard.

-
- g. Click **Next**.
 - h. The Hardware Update Wizard searches for the appropriate driver on the removable media.

Once the appropriate driver is found, the Hardware Update Wizard copies it to the appropriate directory and installs it for the device. If the Hardware Update Wizard finds more than one version, it will display all the versions that are available. Make sure that you select the version that is on the CD-ROM/DVD-ROM. Click **Next**.

NOTE: If the driver of the device is not digitally signed we recommend that you check the HP web site at <http://www.hp.com/support/itaniumservers> for the latest driver package. If there is a later version available, install the new driver(s).

- i. When the Hardware Update Wizard finishes installing the driver, it will display a window indicating the wizard has finished installing the software for the device (the device name will also be displayed).
- j. Click **Finish**.
- k. Close the device properties window.
- l. The **Device Manager** window has now been updated to reflect that the proper driver has been installed for the device.

The device no longer has a (!) or (?) symbol next to it.

- 9. Verify if the installed drivers are digitally signed.
 - a. In the Device Manager, click on the device (e.g. HP Smart Array) that you want to verify.
 - b. Right-click on that device.
 - c. Select **Properties**.
 - d. Click on the **Driver** tab
 - e. Locate the Digital Signer: If the driver of that device is digitally signed then it will display MS Windows Server 2003 Datacenter Server Publisher or Microsoft Windows Hardware Compatibility Publisher.

NOTE: If the driver of the device is not digitally signed we recommend that you check the HP web site at <http://www.hp.com/support/itaniumservers> for the latest driver package. If there is a later version available, install the new driver(s).

- 10. Click on **Event Viewer**, then **System**.
- 11. Check the System Event Viewer to make sure that there are no errors in the log.
- 12. Double-click on all warnings and errors in the right pane to display information about that specific warning or error.
- 13. When done, exit the Event Viewer.

Initialize Hard Drives

To start the disk administrator, use the following procedure.

1. Right-click **My Computer** then, if necessary, click on the + (plus) sign next to **Storage** to open this folder.
2. Click **Disk Management**.
3. The Initialize and Convert Disk wizard will start if you have new hard drives with no signatures on them.
4. Follow the instructions provided by the wizard to create the new hard drive signature.
5. Perform formatting and partitioning.

NOTE: There are two types of hard drive configuration: **Dynamic** and **Basic (GPT or MBR)**. You can select the appropriate type by right clicking on the drive icon on the screen. Dynamic drives are used to create volumes that can contain more than one physical hard drive. Basic (GPT or MBR) drives are used to create primary or local partitioned drives.

Configure a Static IP Address

During the installation process, the server was configured to use DHCP. If no DHCP server is found on the network the system will auto-configure a random IP address to start functioning. It is important that you configure the proper IP address to be able to communicate with the clients. Follow the steps below to configure the server's IP address.

1. From **Control Panel** click **Network Connections**.
2. Double-click **Local Area Connection**. There is one local area connection icon for each network interface card (NIC) present on the system. Identify the proper NIC by browsing each one.
3. Click on the **General** tab on the **Local Area Connection Status** screen then click on **Properties**.
4. Select **Internet Protocol (TCP/IP)**.
5. Click **Properties**.
6. Click **Use the following IP address**.
7. Enter the appropriate IP address, Subnet mask, and Default gateway.

NOTE: If the IP address of the DNS server is available, then enter the appropriate DNS IP address.

8. Make sure that you enter a valid subnet mask value.
9. Click **OK** to continue.
10. Click **OK** in the **Local Area Connection Properties** box to assign an IP address to the Network Interface Card.
11. Ensure that the Network Interface Card is physically connected to your network.

If the Network Interface Card is not connected to the network, you will not be able to test the link.

-
12. Open a command prompt window to verify the TCP/IP configuration. Enter the command:

```
ipconfig /all
```

If the server has a physical connection to the network and a valid IP address with a subnet mask, the command prompt window will display the configuration information you entered above.

13. Test the link by entering the following at the command prompt:

```
ping computername
```

Where *computername* is the server name. The server should reply four times. If the server does not reply, there is a link problem which must be fixed before going any further.

14. Test the link by doing a ping to one of the clients attached to the server, for example:

```
ping 100.100.100.2
```

The client should reply four times.

Configure a Static IP Address via a Remote Desktop Connection

To set a static IP address via a remote desktop connection or on the VGA console follow the steps given below. Changes will persist across reboots, unlike changes made with SAC's "i" command.

1. From the **Control Panel** click **Network Connections**
2. Select the LAN card in question. It can be tricky to differentiate more than one LAN card. Cards, which are not connected to active LAN cables, have a **red "x"**. For the cards which are connected to active LAN cables, clicking on a LAN card brings up a **Status** dialog box which includes a **Support** tab indicating the card's current IP address.
3. After a LAN card is selected, click on the card's icon to display its **Status** dialog box.
4. Select the **Properties** button in the **Status** dialog box. This will display a **Properties** dialog box.
5. Select **Internet Protocol (TCP/IP)** and press the **Properties** button in the **Properties** dialog box. This should bring up a **TCP/IP Properties** dialog box.
6. In the **TCP/IP Properties** dialog box select **Use the following IP address** and enter the IP settings. You can press the **Advanced** button to make additional settings (like WINS servers, and so on).
7. As soon as you press **Close** on the LAN card's **Properties** dialog box your remote desktop connection will be severed. To reconnect your session you will need to open a new remote desktop connection with the new IP address.

Attach Clients to the Network

Follow the normal procedure to patch the clients to the proper hub with the server.

Adding Terminal Server Services

NOTE: Remote Administration mode is enabled by default on all installations of Microsoft Windows Server 2003. To set up Terminal Service to run in Application Mode, follow the instructions in the "Adding Terminal Server Services," section. Also, the Terminal Server Service does not allow two users with the same logon name to log in at the same time.

1. Open the **Control Panel**.
2. Double-click **Add Remove Programs**.
3. Click on **Add/Remove Windows Components**.
4. Scroll to and select **Terminal Server**.
5. Click **Next**.
6. Click **Next** at the **Terminal Server Setup** screen.
7. Click **Next** at the next screen to accept the default **Full Security**.
8. If prompted, insert the Microsoft Windows Server 2003, Datacenter Edition, CD-ROM.
9. Click **Finish** to close the Wizard.
10. Click **Yes** to restart the system. (Remove the CD-ROM.)
11. After the system reboots, log in to the system.
12. Open the **Control Panel**.
13. Open the **Administrative Tools** folder. You should see the following icons present: Terminal Server Licensing, Terminal Services Configuration, and Terminal Services Manager.

SetUp Remote Desktop Connection (IA32 computer)

You can obtain a copy of the remote desktop utility from the C:\windows\system32\clients directory on your HP Integrity Server. After you have obtained the utility, do the following:

1. Copy all the files in the TSClient\win32 directory to a floppy or other media.
2. On the client system, create a directory and put all the files there.
3. Select the setup file and click on it to install the remote desktop utilities.
4. Follow the installation instructions in the **Remote Desktop connection - InstallShield Wizard** screen.

NOTE: You may also use this Terminal Services client software component to display or use programs by connecting to, and using, the services of Microsoft Windows NT Server 4.0, Terminal Server Edition, and Microsoft Windows 2000 OS products.

The Remote Desktop Connection Utility's setup files are also located in the C:\Windows\system32\clients\tsclient\win32\ directory.

Set Up Remote Desktop Connection (IA64 computer)

NOTE: Remote Administration mode is enabled by default on all installations of Microsoft Windows Server 2003. To setup Terminal Service to run in Application Mode, follow the instructions in the "Adding Terminal Server Services," section. Also, the Terminal Server Service does not allow two users with the same logon name to log in at the same time.

1. Click **Start>Programs>Accessories>Communications>Remote Desktop Connection**.
2. Click on the **Computer** dropdown box.
3. Select **Browse for more**.
4. Select the appropriate computer name in the **Browse for computers** dialog box.
5. Click **OK**.
6. Click **Connect**.
7. Log on with a valid user name and password.
8. You should see a remote desktop window for the computer you selected.

NOTE: You may see the minimized version of the remote connection window at the top of your screen. Click on the maximize button.

Troubleshooting Tips for Configuring Windows

This section provides information about known issues, solutions and workarounds.

Tip 1. Importing the OS Loader to NVRAM

NOTE: When Windows is installed data is stored in NVRAM that enables that version of Windows to be booted from the EFI boot Manager. If NVRAM is cleared or corrupted this data must be imported back into NVRAM to enable EFI boot Manager to offer this boot option. To import boot data back into NVRAM follow the instructions below.

1. Insert the image drive to the system.
2. Boot the system and go to the EFI Shell.
3. Access the image directory, for example, Shell > fs0:
4. Enter the command:

```
DIR
```

5. Enter the command:

```
CD MSUTIL
```

6. Enter the command:

```
NVRBOOT
```

```
NVRBOOT: OS Boot Options Maintenance Tool [Version 5.2.3683]
```

```
1. EFI Shell [Built-in]
```

```
* = Windows OS boot option
```

```
(D)isplay (M)odify (C)opy E(x)port (I)mport (E)rase (P)ush (H)elp (Q)uit
```

```
Select>
```

7. Select **I** to import the OS loader of the image to the server's NVRAM.

```
Select>I
```

8. Type the path of the boot file.

```
Enter IMPORT File Path: \EFI\microsoft\winnt50\boot0000.
```

```
Locate your boot file path before entering NVRBOOT
```

9. When completed, the boot option displays in NVRBOOT and on the EFI boot Manager.

```
NVRBOOT: OS Boot Options Maintenance Tool [Version 5.2.3683]
```

```
1. EFI Shell [Built-in]
```

```
* 2. Windows Server 2003, Datacenter
```

* = Windows OS boot option

(D)isplay (M)odify (C)opy E(x)port (I)mport (E)rase (P)ush (H)elp (Q)uit

Select>

Tip 2. How to Boot Microsoft Windows Server 2003, Datacenter Edition, to Safe Mode

This tip explains how to configure Microsoft Windows Server 2003, Datacenter Edition, to SAFE boot on HP Integrity Servers. It provides two ways of implementing the objective. One is manually using NVRBOOT.EFI to create the entries. The other method is semi-automatic using WINPE environment with a batch file safeboot.cmd to make the entries and NVRBOOT.EFI to edit the entries.

NOVESA option: There is an issue with the legacy VGA driver in Windows that requires disabling extended VESA modes during installs using the /NOVESA boot option. This is done automatically as part of the pre-loaded Windows installation.

You never want to remove this flag, as it may cause Windows to halt. So when modifying loadoptions always include the /NOVESA option.

You will need to add two EFI boot manager entries to allow the server to boot to Safe Mode. Three methods for accomplishing this objective are described below:

1. Using the EFI environment by running NVRBOOT.EFI (Microsoft tool).
2. Using the WINPE environment by running a batch file which calls EFINVR.EXE (Microsoft tool).
3. Boot the OS and press the **F8** function key when Windows is starting up.

NOTE: The HP Re-install media provided by the hardware manufacturer does not make any of these safe-boot entries. The default is still the same as Microsoft Windows Server 2003.

METHOD #1: Using EFI Environment by Running NVRBOOT.EFI

Create the EFI boot manager entry for /safeboot **minimal**, as follows:

1. Boot to the EFI prompt.
2. Run the nvrboot.efi utility (nvrboot.efi file is hidden and located in the EFI partition).

NVRBOOT: OS Boot Options Maintenance Tool [Version 5.2.3683]

```
* 1. Windows Server 2003, Enterprise
  2. DVD CD
  3. EFI Shell [Built-in]
* = Windows OS boot option
```

(D)isplay (M)odify (C)opy E(x)port (I)mport (E)rase (P)ush (H)elp (Q)uit

Select>

3. Copy the existing Windows Server 2003 entry to a new entry.

Select> c

Enter OS boot option to copy: 1

4. Now modify the just copied boot option name and load options, which now should be boot option 4.

5. Select **M(Modify)** to modify the OS boot loader.

Select> m

6. Enter the OS boot option to modify.

Enter OS boot option to modify: 4

7. Enter VAR to modify: 2

a. LoadIdentifier = Windows Server 2003, Datacenter

b. OsLoadOptions = /REDIRECT /NOVESA

c. EfiOsLoaderFilePath = cf5f2ddc-b885-11d7-b831-000000000000 ::
\\efi\\microsoft\\winnt50\\ia64ldr.efi

d. OsLoaderFilePath = e605a034-b885-11d7-b831-000000000000 :: \\windows

Enter var to modify: 2

8. Set OsLoadOptions

OsLoadOptions = /safeboot:minimal /sos /bootlog /redirect /novesa

9. Then modify LoadIdentifier to something descriptive like

LoadIdentifier = Windows Server 2003, Safe-Boot Minimal

10. Exit nvrboot.

METHOD #2: Using the WINPE Environment by Running a Batch File that Calls EFINVR.EXE

The only tool available from EFINRV.EXE to make an EFI boot manager entry does not allow you to pass the entry description or **LoadIdentifier**.

1. Boot the WinPE Re-install media. (Version 1.6J or later).
2. Open a command prompt.
3. Enter the `safeboot.cmd` command. This will create the two EFI boot manager entries listed above. These entries will be at the bottom of the EFI boot manager list. However, the entry description for both of these needs to be changed.
4. Exit WinPE and boot to the EFI environment.

-
5. Run `nrvboot` and modify **LoadIdentifier** for both entries. We recommend Microsoft Windows Server 2003 Safe-Boot Minimal for one, and Microsoft Windows Server 2003 Safe-Boot Network for the other one.

The following screen examples show sequentially what the boot manager displays after the entries are made:

```
EFI Boot Manager ver 1.10 [14.56] Firmware ver 80.10 [4216]
Please select a boot option
  Microsoft Windows Server 2003
  DVD CD
  EFI Shell [Built-in]
  Microsoft Windows Server 2003 Safe Mode Minimal
  Microsoft Windows Server 2003 Safe Mode Network
  Boot option maintenance menu
  Security/Password Menu
```

The following is a screen example of the `nvrboot.efi` display option:

```
NVRBOOT: OS Boot Options Maintenance Tool [Version 5.1.3550]
* 1. Microsoft Windows Server 2003
  2. DVD CD
  3. EFI Shell [Built-in]
* 4. Microsoft Windows Server 2003 Safe Mode Minimal
* 5. Microsoft Windows Server 2003 Safe Mode Network

* = Windows OS boot option

(D)isplay (M)odify (C)opy E(x)port (I)mport (E)rase (P)ush (H)elp
(Q)uit

Select> d
Enter boot option to display: 4
1. LoadIdentifier = Microsoft Windows Server 2003 Safe Mode
Minimal
```

```
2. OsLoadOptions = /safeboot:minimal /sos /bootlog /redirect
/novesa
3. EfiOsLoaderFilePath = 006F0073-0066-0074-5C00-570049004E00 ::
\EFI\Microsoft\
WINNT50\ia64ldr.efi
4. OsLoaderFilePath = 8EB50004-ABB1-47EF-5DB8-BF7695FC883A ::
\WINDOWS
```

Press enter to continue

```
(D)isplay (M)odify (C)opy E(x)port (I)mport (E)rase (P)ush (H)elp
(Q)uit
```

Select> d

Enter boot option to display: 5

```
1. LoadIdentifier = Microsoft Windows Server 2003 Safe Mode
Network
2. OsLoadOptions = /safeboot:network /sos /bootlog /redirect
/novesa
3. EfiOsLoaderFilePath = 006F0073-0066-0074-5C00-570049004E00 ::
\EFI\Microsoft\
WINNT50\ia64ldr.efi
```

Tip 4. Blank Passwords and Local User Accounts

Microsoft Windows Server 2003, Datacenter Edition, has a new default security feature that helps protect users with blank passwords from attacks. Users who do not password-protect their accounts can only logon to their account at the Welcome (Winlogon) screen on the physical computer console (monitor, keyboard, mouse physically connected to the computer). This restriction applies to all logon types, not just network logon.

For example, you will not be able to use RunAs to run a process as an account with a blank password. This restriction only applies to local user accounts, and not to domain user accounts. It also does not affect the guest account. Domain controllers will ignore this option, since it doesn't apply to domain accounts. This feature is configurable through Local Security Policy, or through Domain Policy.

Tip 5. Using the Windows Diskpart Tool

You can access the online help and run the OPK tool from within the OS.

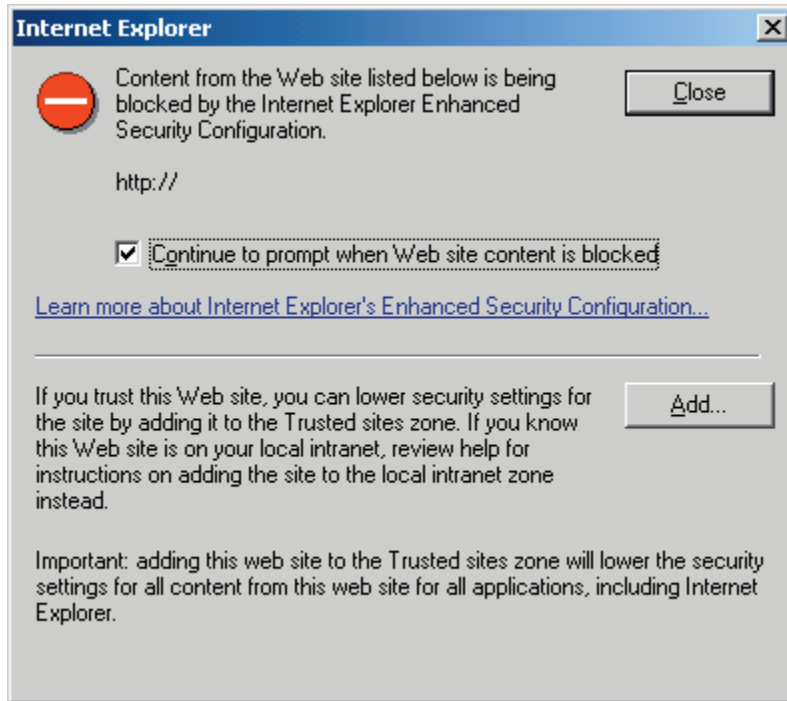
1. Boot from the re-install media.
2. Open a command prompt by clicking **Advance**.
3. Run **diskpart.exe**
4. Type `help` at the diskpart menu:
DISKPART>help
5. Follow the on-screen instructions.

Tip 6. The HP Array Configuration Utility (ACU) Displays Security Warning Messages Correctly When Using Microsoft Internet Explorer 6.0 Shipping with Microsoft Windows Server 2003

Microsoft Windows Server 2003 ships with a slightly modified version of Microsoft Internet Explorer 6.0 that differs in the way it categorizes targeted server sites into security zones. In previous releases of IE 6.0, servers on local intranets defaulted to belong to the Local Intranet Zone, with a relaxed set of default security settings. In this new version of Internet Explorer 6.0, all servers default to the Internet Zone which defaults to the highest level of security settings. If the HP Array Configuration Utility is used while the site is still categorized in the Internet Zone, security warning messages will be displayed.

NOTE: To use ACU you must use Internet Explorer 32bit under Program Files X86 in the start menu.

If you are running the Array Configuration Utility in Local Application Mode (this mode does not use a web server and is the default execution mode for ACU 6.40 and later), you will get the following security warning message in Internet Explorer:



If you are running the Array Configuration Utility in Remote Service Mode (this mode uses a web server and allows the ACU to be accessible from remote systems using the System Management Homepage), numerous security warning messages will be displayed until the Don't Show Me This Anymore box is checked or the targeted server is manually added to the browser's Local Intranet zone.

If you use an IP address in the URL instead of the server name, Internet Explorer will show the following security warning:

Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate:

The name on the security certificate is invalid or does not match the name of the site. Do you want to proceed?

This problem impacts ACU 6.40 on any version of Microsoft Windows Server 2003 with Internet Explorer 6.0. The solution is given below.

If you are running the Array Configuration Utility in Local Application Mode (this mode does not use a web server and is the default execution mode for ACU), you need to add the local ACU to the "Trusted Sites" zone:

1. Click **Add** on the security warning to bring up a screen which allows you to add sites to the "Trusted Sites" zone.

-
2. Click **Add** to add http:// to the “Trusted Sites” zone. Note: this will add http://*.0.0.0.0 to the list of trusted sites and will allow the ACU to run in Internet Explorer properly without using a web server.
 3. Click **Close**.

If you are running Array Configuration Utility in Remote Service Mode (this mode uses a web server and allows the ACU to be accessible from remote systems using the System Management Homepage), check the Don't Show Me This Anymore box on the security warnings that appear and add the desired target servers to the Local Intranet Zone by performing the following steps:

1. Click **Tools** from the Internet Explorer 6.0 pulldown menu.
2. Select **Internet Options** and select the **Security** tab.
3. Click on the **Local Intranet** icon, then select **Sites>Advanced**.
4. Manually enter the target servers in the Local Intranet Zone in the following format:

```
http://<SERVERNAME IPaddress>:2301  
-OR-  
https://<SERVERNAME IPaddress>:2381
```

If accessing the Array Configuration Utility using an IP address in the URL, click **Yes** on the security warning to proceed.

NOTE: JavaScript must be enabled in Internet Explorer to run the Array Configuration Utility. JavaScript is enabled with Internet Explorer's default security level of the Trusted Sites zone and Local Intranet Zone.

There is a workaround. See the solution described above.

Tip 7. How to Enable Video Mode to Display/Output in an EFI Environment

EFI Boot Manager version 1.10 [14.61]

1. Select **Boot option maintenance menu** from the following menu:
Windows Server 2003, Datacenter
EFI Shell [Built-in]
Boot option maintenance menu

EFI Boot Maintenance Manager ver 1.10 [14.61]

1. From the main menu, select an operation.
Boot from a File
Add a Boot Option
Delete Boot Option(s)
Change Boot Order
Manage BootNext setting
Set Auto Boot TimeOut
Select Active Console Output Devices
Select Active Console Input Devices
Select Active Standard Error Devices
Cold Reset
Exit
2. Highlight Select Active Console Output Devices, and then press enter.

EFI Boot Maintenance Manager ver 1.10 [14.61]

1. Select the Console Output Device(s).
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(PcAnsi)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100)
* Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(Vt100+)
Acpi(000222F0,0)/Pci(0|0)/Uart(9600 N81)/VenMsg(VtUtf8)
Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)
Save Settings to NVRAM
Exit
Select **Acpi(000222F0,8)/Pci(1|0)/Pci(5|0)**.
2. Save settings to NVRAM and then exit.

Tip 8. To configure large configuration systems to save OS memory dumps

Windows offers the ability to manage the page file. At pre-load, a custom page file size is chosen based on the amount of memory configured into the partition. The page file size may be subsequently changed or additional page files configured for performance reasons. Windows will try and use page files that are not resident on the system disk if more than one page file exists. Page file usage may be monitored using the Task Manager or System Monitor.

Windows can also be configured to save a memory dump on failure. Kernel memory dumps and full memory dumps both use the system page file as a temporary storage device and the page file must therefore be of sufficient size. For systems configured with up to 2Gb of RAM, the page file on the system disk must be set to the size of physical ram +12Mb to save a full memory dump and about half of this to save a kernel dump. Under Windows 2003, the full dump option is not available if the system has more than 2Gb of RAM installed. Administrators are recommended to increase the page file on the system drive to the lesser of 20% of the total physical memory or 20Gb. In all cases the Initial size for the page file on the system disk should match the Maximum size in order to save a memory dump.

After a failure and a system reboot, the memory manager will copy the memory dump from the system page file to a location specified by the administrator. This location must be on a locally attached disk which must be monitored to ensure there is enough free space to hold the memory dump. Subsequent memory dumps will overwrite each other.

To increase the page file size:

3. Right click **My Computer** then **Properties**
4. Select the **Advanced** tab, then **Performance Settings**.
5. Select the **Advanced** tab, then **Virtual memory** Change.
6. Under **Drive**, select the volume where the page file will be located.
7. Under **Paging file size for selected drive**, select **Custom size and** set the size to 20GB.

Selecting **System managed size** will result in Windows sizing the page file to the recommended size. If this is too large, select **Custom size** and set the size to 20% of physical memory. For example, if the system has 512 GB of physical memory, set the size to 102500 MB.

8. For the page file on the system disk, ensure the initial is set to the same value as the maximum size.
9. Click **OK until you are at the System Properties Dialog. Then click on Startup and Recovery Settings**.
10. There will be typically three choices for **Write debugging information, None, Small Memory Dump, and Kernel memory dump**.

If there is not enough disk space on the system disk to satisfy the 20% size recommendation, select the largest size possible and retain the kernel memory dump setting. The small memory dump does not normally contain sufficient information to be able to identify a root cause for a system failure. However, they can be useful to identify whether a series of failures might be all due to the same root cause and have the advantage that they can be easily emailed.

Creating a dump on an unresponsive system

HP recommends to exercise caution when performing this action since it results in system failure requiring a soft reset. If a system is unresponsive, a kernel memory dump can be created using either of two methods:

1. Using the SAC 'crashdump' command. At the SAC prompt, type `crashdump`. The SAC display will be updated to reflect a fatal system error - "0x000000E2 – Manually Initiated Crash," and will indicate that a dump of physical memory is being created. Under certain conditions, CEs may observe a different bugcode – "0x0000000A - IRQL_NOT_LESS_OR_EQUAL." This is a known issue and will still result in a valid crash dump being created.
2. Using the MP, enter the Command Menu – 'cm'. To initiate the dump, use the 'tc' command. The SAC display will be updated to reflect a fatal system error – "0x000000E2 – Manually Initiated Crash," and will indicate that a dump of physical memory is being created.

System Restore Media and Page Files

The system partition must be created on a 32GB or larger disk drive. When using re-install media, administrators and CEs should use either the 32 GB or the max drive size option when configuring the system volume. Using the 16 GB option will result in an inability to create a kernel memory dump in the event of a system failure unless the page file size is manually configured afterward. Additionally, manual configuration of the page file size when using the 16 GB option will still result in a page file size of less than 20 GB, which is the minimum recommended size.

Tip 9. How to reboot (-R) or shut down (-S) for reconfiguration from the SAC prompt

NOTE: A shutdown or reboot for reconfiguration must be performed before any ParCLI operations are performed. HP recommends performing shutdown or restart through the methods below in order to avoid unexpected shutdown error dialog messages.

To execute the -R for reboot

1. Go to the SAC> prompts of the target partition.
 - a. From the SAC> prompt create command channel

```
SAC>cmd
The Command Prompt session was successfully launched.
SAC>
EVENT: A new channel has been created. Use "ch -?" for channel help.
Channel: Cmd0001
SAC>
```
 - b. Press ESC then TAB keys to switch to channel CMD0001

```
Name: Cmd0001
Description: Command Prompt
```

Type: VT-UTF8
Channel GUID: 39ffb321-b8b1-11d7-8335-505054503030
Application Type GUID: 63d02271-8aa4-11d5-bccf-00b0d014a2d0
Press <esc><tab> for next channel.

Press <esc><tab>0 to return to the SAC channel.

Use any other key to view this channel.

- c. Press any key to open the channel then type in the administrator username and password. Please enter login credentials.

Username: Administrator

Domain:

Password: *****

- d. Now type shutdown /-r to shutdown and then restart

Microsoft Windows [Version 5.2.3790]

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C:\windows\system32>shutdown -r -t 0

To execute the shutdown –S for shutdown

1. Go to the SAC> prompts of the target partition.

- a. From the SAC> prompt create command channel

SAC>cmd

The Command Prompt session was successfully launched.

SAC>

EVENT: A new channel has been created. Use "ch -?" for channel help.

Channel: Cmd0001

SAC>

- b. Press ESC then TAB keys to switch to channel CMD0001

Name: Cmd0001

Description: Command Prompt

Type: VT-UTF8

Channel GUID: 39ffb321-b8b1-11d7-8335-505054503030

Application Type GUID: 63d02271-8aa4-11d5-bccf-00b0d014a2d0

Press <esc><tab> for next channel.

Press <esc><tab>0 to return to the SAC channel.

Use any other key to view this channel.

- c. Press any key to open the channel then type in the administrator username and password. Please enter login credentials.

Username: Administrator

Domain:

Password: *****

- d. Now type shutdown /-s to shutdown gracefully

Microsoft Windows [Version 5.2.3790]

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C:\windows\system32>shutdown -s -t 0

Tip 10. Adobe Acrobat Reader does not support Windows Server 2003

Issue: If you download Adobe Acrobat Reader from the Adobe website you will not see the Windows Server 2003 OS listed in the platforms available.

Workaround: Download the Adobe Acrobat Reader from Adobe's Text-only download page. This allows for a general Windows install of the reader.

Tip 11. PCI Hot-Plug fails on the HP Integrity Superdome and the HP Integrity rx8620/rx7620

Issue: Addition and/or deletion continually fail.

Workaround:

1. Bring up device manager and expand the system devices. Right-click on the **HPCSR OpRegion Driver**. Click **properties**. Click the **driver** tab. The driver should be version 1.1.0.0, dated 6/5/2003. If not the driver must be updated.
2. Open the **OnlineReference** page on the desktop.
3. Click **OEM Drivers**.
4. In the **Description** column click **Click on HP (Hotplug) Region Driver**. This starts the devecon driver update.
5. Answer **Yes** to install the driver.

On-Line Information and Software Sources

HP Integrity Servers site:

<http://www.hp.com/support/itaniumservers>

HP Internet website:

<http://www.hp.com>

Microsoft World Wide Web:

<http://www.microsoft.com>

Register for Alerts and Notifications

HP recommends that you sign-up and register for alerts and notifications. HP driver and support alerts will keep you up to date with information customized to your product and frequency needs. Please go to

<http://www.hp.com/go/subscriberschoice>

Register for Microsoft security bulletin notification service

HP recommends that customers sign-up for the Microsoft security bulletin notification service at

<http://www.microsoft.com/technet/>

Register for Windows update

HP recommends that customers use the Microsoft Windows Update feature to keep their system secure. Please go to

<http://windowsupdate.microsoft.com/>